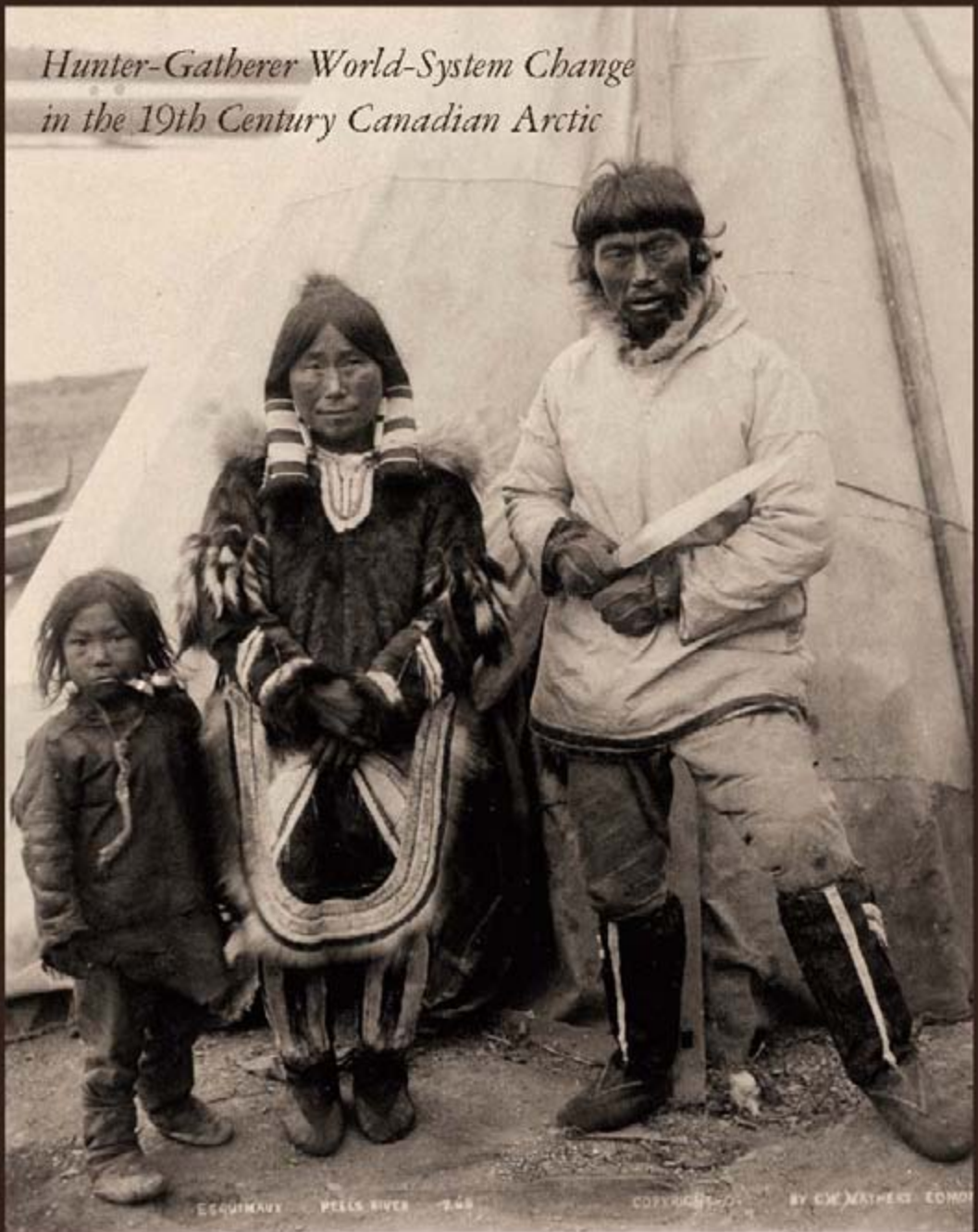
When Worlds Collide

Hunter-Gatherer World-System Change in the 19th Century Canadian Arctic



T. Max Friesen

When Worlds Collide

THE ARCHAEOLOGY OF COLONIALISM IN NATIVE NORTH AMERICA

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Hunter-Gatherer World-System Change in the Nineteenth-Century Canadian Arctic

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To my parents, James and Lynn Friesen

Contents

Figures

Tables

Preface

ALTHOUGH IT HAS CHANGED A GREAT DEAL, this book originated as my PhD dissertation, which was defended in 1995. Since then, I have contemplated its publication several times but was always pulled in other directions. In the summer of 2009, I finally began an extensive overhaul and updating of the text and the ideas behind it. This was an interesting chance to immerse myself in how I thought, and performed research, fifteen years earlier. What I found was a piece of work that seemed to contain some useful ideas but that was somewhat hindered by, on the one hand, quite a reductionist mindset, and on the other, occasional circularity of logic. In its present form, I have managed to temper these shortcomings significantly, although the reader may take some pleasure in discovering those that remain.

The intervening years have led me in several new research directions, but I am glad I chose the path I did for this book. I firmly believe that there has not been enough study of intersocietal interaction among small-scale societies generally and hunter-gatherers specifically. There is still a need for general studies such as this one, which will continue to be refined, challenged, and reimagined.

The research described in this book could not have been accomplished without the contributions of a great range of individuals and organizations. The members of my PhD committee—Professors James Savelle, George Wenzel, and Michael Bisson—all provided superb advice and guidance through the research process. I am especially indebted to James Savelle for his superlative and insightful supervision of my PhD program. My fellow graduate students at McGill, especially Junko Habu and Peter Whitridge, also played an important role in my graduate career by providing friendship and a stimulating academic environment.

Many other archaeologists have also contributed to this research. Foremost among these are Dr. Charles Arnold of the Prince of Wales Northern Heritage Centre, who gave me my first field experience in the Arctic; Jeff Hunston of the Yukon Territorial Government, who greased the wheels and was generous with his extensive knowledge of Yukon North Slope archaeology; and Ruth Gotthardt, Yukon Territorial archaeologist, who helped and encouraged this research in innumerable ways. Others who have contributed through conversation, correspondence, and other forms of aid include John Bockstoce, Rachel Brinkman, Cathy Cockney, Tara Grant, Greg Hare, Elisa Hart, Diana

Komejan, Raymond Le Blanc, Allen McCartney, Robert McGhee, David Morrison, Murielle Nagy, Brent Riley, and Liza Rupp. Many thanks are also due to Anne Rick and Leslie Still of the Canadian Museum of Nature, who identified most of the faunal samples. Matthew Walls produced Figures 1, 2, 3, 5, 6, and 7.

In many ways, my greatest debt is owed to the field crews who managed to survive three seasons on Herschel Island; the successes of the project are due to their hard work. The field crews included the following: from Aklavik and Inuvik in the Mackenzie Delta, Dean (Manny) Arey, Danny Gordon Jr., Jerome Gordon, Mervin Joe, Naudia Lennie, Frankie Paul, and Richard Tardiff; from Old Crow and Pelly Crossing in Yukon, Ronald Frost, Eugene Johnny, and Alvie Josie; and from Toronto and Peterborough, Peter Dawson, Nancy Saxberg, and Doris Zibauer. Great thanks are also owed to Herschel Island Park Rangers Victor Allen, Graham Baird, Frank Elanik, Colin Gordon, Lee John Meyook, and Andy Tardiff for their friendship and help with many aspects of the excavations. Other individuals who helped with the fieldwork include Marshall Netherwood of the Joint Secretariat in Inuvik, Brenda Benoit and Sadie Whitebread of the Aklavik Hunters and Trappers Association, and Renee Frost of Old Crow.

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The research described in this book was performed in cooperation with many organizations and individuals from Inuvialuit and Yukon First Nations communities. Although this book is written for an academic audience, the information from Herschel Island has been returned to these communities through several means, including community meetings and talks as well as publications intended for the public. These include a booklet produced by the Yukon Territorial Government (Friesen 1998, 2007; recipient of the Canadian

Archaeological Association Public Communication Award in 1999), as well as a recent book chapter (Friesen 2012).

Portions of the text in Chapters 4 and 6 were originally published in Canadian Archaeological Association, Occasional Paper No. 2 and *Alaska Journal of Anthropology*, Volume 7. Figure 11 originally appeared in the booklet *Qikiqtaruk: Inuvialuit Archaeology on Herschel Island*, published by the Yukon Government; Figures 12, 15, and 18 appeared in Canadian Archaeological Association, Occasional Paper, No. 2; and Figure 17 originally appeared in *Alaska Journal of Anthropology*, Volume 7. I am grateful to these organizations for granting permission to include this material in the present volume.

Finally, I thank my wife Heather for her love and support, from the initial writing of the dissertation to the present.

When Worlds Collide

1

Introduction

INTERSOCIETAL INTERACTION IS ONE OF THE MAJOR FORCES driving culture change and is a universal phenomenon. Whether studied in terms of diffusion, acculturation, exchange, warfare, colonialism, transmission of disease, or any of its other facets, this process has helped shape the nature of all societies, past and present. Even in the most extreme instances of isolation, as in the case of remote Polynesian islands, multiple societies tended to develop and interact in trade and conflict (e.g., Kirch 1984; papers in Kirch 1986). However, despite the importance of intersocietal interaction in human history, it has often been neglected by archaeologists, who have tended to emphasize endogenous cultural processes instead (Trigger 1989a:331). As such, there have been repeated calls for increased attention to the nature and effects of intersocietal interaction in the archaeological record (e.g., Adams 1977; Caldwell 1964; Knappett 2011; Kohl 1989; Oka and Kusimba 2008; Shennan 1987; Trigger 1989b; Wolf 1982).

Interaction among hunter-gatherer societies has been studied from many perspectives, including considerations of the frequency and nature of exchange (Carlson 1994; Zvelebil 2006), the role of warfare (Maschner and Reedy-Maschner 1998; Schaepe 2006), the impact of transportation technology (Ames 2002; Arnold 1995), and the consequences of interaction on social organization (Arnold 1992; Gamble 1999; Hickey 1984). However, despite the enormous collective contribution of these studies, interaction remains incompletely understood because of a range of factors, including the low archaeological visibility of many of its facets, as well as the fact that it is so complex, being composed of many interconnected parts that are experienced differently by each individual, group, and society.

This book contributes to the development of a general perspective for the study of intersocietal interaction among hunter-gatherers. The approach developed here is an experimental adaptation and expansion of aspects of world-system theory, with input from a range of previous hunter-gatherer studies

that are themselves influenced by a variety of theoretical paradigms. This approach is used to develop a model for how hunter-gatherer world-systems (intersocietal networks) are structured and why they change.

The model is then applied to the archaeological and ethnographic records of the Inuvialuit[1] inhabitants of the western Canadian Arctic over the past five hundred years. This period, which saw the transition of indigenous people from their relatively autonomous precontact[2] pattern to one in which they were fully integrated into the European world-economy, will be used to evaluate the model for three main reasons. First, the period of indigenous-European contact across the globe provides a powerful contextualized database for the study of culture change. A substantial documentary record exists for most cases of colonial contact, and it can supply data sets that are complementary to data available in the archaeological record (Moreland 2001; Spores 1980). However, archaeological data are necessary for a complete understanding of this period, because the documentary record is often incomplete or distorted by the perspective of the recorder (Kilmarx 1986; Reff 1991; Wobst 1978), and because only archaeology allows analysis of interaction during the precontact period, before indigenous groups were strongly affected by the expanding world-economy and associated epidemic diseases (Dobyns 1983; Keenleyside 1990; McGhee 1994; Ramenofsky 1987).

The second reason for using this period to evaluate the model of interaction is that, as in most cases of colonial interaction, the nature and scale of the societies in contact were remarkably different (cf. Trigger 1986:255). Additionally, in colonial contexts interaction often occurred in a situation where unequal power was manifested in technological, military, and ideological differences between societies (Bartel 1985; Horvath 1972; Silliman 2005). Interaction between two very different cultures created the potential for dramatic conflict and for the pace and scale of change to increase. Change was often so rapid that it was clearly evident to members of the interacting societies; for example, Mi'kmaq sites are rarely found to contain both stone and metal cutting tools, indicating significant technological change within a generation (Burley 1981:212). Therefore, the results of colonial-period interaction will often be exaggerated and should produce distinct archaeological patterns that can be used to understand general processes and evaluate interaction models.

The third reason for this book's chronological focus is that the colonial period is currently undergoing dynamic reappraisal, with archaeology playing a central role in this process (e.g., Gosden 2004; Lyons and Papadopoulos 2002). In particular, indigenous peoples' roles in the colonial process, previously explicitly or implicitly characterized as passive and uncomplicated, are being reframed as active, dynamic, variable, and of key importance in understanding

how the modern world came to be (Rubertone 2000; Silliman 2005; Stein 2002). Related to this are trends away from rigid dichotomization of "prehistoric" and "historic" periods, replaced by emphasis on continuities and common themes in indigenous cultural development across time (Ferris 2009; Mitchell and Scheiber 2010; Silliman 2010). The case study developed in this book is tightly linked to this reappraisal of colonial-period archaeology, because it is centered on the long-term development of the Inuvialuit world-system—that is, the spatially extensive network of interacting indigenous regional groups. This world-system developed and changed over time because of a host of factors, including social structures internal to Inuvialuit society, regional environmental variability, and external impacts originating in the expansion of the European world-economy. By framing the analysis in this fashion, the Inuvialuit and European world-systems are placed on an equal theoretical footing despite their obvious difference in scale, and the central role of Inuvialuit society in shaping the nature of interaction and of cultural change is emphasized.

2

The World-System Approach to Intersocietal Interaction

THIS BOOK USES, and builds on, a framework derived from world-system theory in order to understand the nature of intersocietal interaction in the past. However, the study of interaction is an enormous and diverse realm of research, with many approaches employed depending on the researchers' backgrounds, primary data sets analyzed, desired research outcomes, and intellectual fashions of the day. Therefore, before presenting a more detailed description of world-system theory, I will summarize several bodies of thought relating to the archaeology of intersocietal interaction. This summary is not exhaustive; rather, it is intended to provide some sense of the rich intellectual context within which studies of past interaction are situated.

Archaeological Approaches to Interaction

Acculturation

"Acculturation," the general term used in many past archaeological studies of intersocietal interaction, can be defined as change in any society that results from contact with another society. The archaeological study of acculturation is ultimately derived from anthropological studies that arose in the 1930s and 1940s in response to increased interest in the effects of colonial dominance on non-Euroamerican societies (Slofstra 1983:71; Trigger 1985:165). The most frequently cited definition is that of Broom et al. (1954:974), who defined acculturation as

> culture change that is initiated by the conjunction of two or more autonomous cultural systems. Acculturative change may be the consequence of

> direct cultural transmission; it may be derived from noncultural causes, such as ecological or demographic modifications induced by the impinging culture; it may be delayed, as with internal adjustments following upon the acceptance of alien traits or patterns; or it may be a reactive adaptation of traditional modes of life.

This definition is a broad one in that it clearly includes under the rubric "acculturation" the effects of both indirect and direct contact, both equal and unequal interaction, and even epidemic disease.

In practice, acculturation is often defined more narrowly. For example, Redfield et al. (1936:149) defined acculturation as consisting of "those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns for either or both groups," thereby excluding the effects of indirect contact. Kroeber (1948:425) stated that acculturation "comprises those changes produced in a culture by the influence of another culture which result in an increased similarity of the two," which limits the process by deemphasizing creative, new recombinations of aspects of the two interacting societies. In contrast, Broom et al. (1954:985) have written that acculturation "is a culture-producing as well as a culture-receiving process. Acculturation, particularly when not forced, is essentially creative." Finally, acculturation often refers to intense contact between groups that have not been in previous long-term contact (Bee 1974:96; Pilling 1970:4), and to groups that are initially extremely different from one another (Bee 1974:96; Brain 1988:6). For both of these reasons, many categories of change due to interaction—such as that whereby modern European nation-states influence each other through trade, communication, or conflict—are not usually considered acculturation.

Studies that explicitly use acculturation as a theoretical framework have decreased in popularity in anthropology since the 1960s, for several interconnected reasons. Most clearly, and as a result of the ongoing decolonization of academia, acculturation is often directly associated with a colonialist mentality that sees "superior" cultures influencing others with no return influence (e.g., Malkin 2002), leading to a unidirectional perception of the process (Lyons and Papadopoulos 2002; Stein 2002). Thus, some approaches to interaction that emphasize a perspective drawn from acculturation can be simplistic, because they fail to recognize the complex multidirectional nature of interaction or the fact that it can create "new" hybrid societies that do not closely resemble any of the interacting groups (Alexander 1998; Knapp 2008; Lightfoot 2006; Rubertone 2000; Silliman 2005). Furthermore, in some cases acculturation studies tend to focus on the results of contact, rather than providing a

theoretical framework for a consideration of the *processes* of interaction (Slofstra 1983:72). Nevertheless, acculturation continues to be the jumping-off point for a number of archaeological studies of interaction, particularly in colonial contexts (e.g., Brain 1988; Cusick 1998a; Farnsworth 1989a; Frankel 2005; Moore 2004; Smith 1987; Smith 1998).

However, because of the wide variability displayed in definitions of the term, "acculturation" is useful mainly as a very general term for change in human societies that results from contact with other societies *unless* the author defines it more precisely. This differentiates it from the more limited term "diffusion," which refers to the spread or movement of specific ideas, technologies, or institutions. Studies of diffusion have become distinctly unfashionable, probably because abuses of the concept have attributed a large proportion of all change to diffusion (e.g., Smith 1933), thus implying limited creativity on the part of the accepting culture (Trigger 1989a:406), and also because the study of diffusion has been "decried as descriptive" (Hodder 1991:93).

The most common data set used in archaeological studies of acculturation is composed of exchanged materials, which serve as direct evidence of interaction. At the simplest level, an intuitive dichotomy can be drawn between "introduced" (i.e., traded or exchanged) and "indigenous" artifacts in any given assemblage. This dichotomy is certainly useful in indicating the simple *presence* of some sort of contact. The presence of even a single historical artifact must indicate some degree of direct or indirect contact, as in the case of Norse artifacts in precontact Canadian Arctic sites (Appelt and Gulløv 2009; Fitzhugh 1985b; McGhee 1984; McGovern 1979) or Spanish artifacts in the southeastern United States (Mitchem 1989). This dichotomy can also be useful in providing relative chronology, as in the case of Fitzgerald's (1982, 1983) seriation of Neutral sites in southern Ontario based in part on the ratio of European to Neutral artifacts (see also Hobler 1986). Such seriation may not be as effective for establishing chronology in areas where contact did not grow in incremental degrees. For example, in the southeastern United States, initial direct contact was followed by relative isolation and population collapse (Smith 1989), during which time fewer artifacts may have been imported than during the period of initial contact.

The consideration of "degree of acculturation" can be made more precise by considering the fact that many artifact types fall between the two extremes of "indigenous" and "introduced" forms. The indigenous/introduced dichotomy cannot adequately classify artifacts such as indigenous "art" that depict European objects or themes (Lee and Neuerburg 1989; Turpin 1989), or traditional chipped scrapers manufactured from bottle glass (Pilon 1990a:132). An early,

and influential, attempt to categorize the full range of potential combinations was developed by Quimby and Spoehr (1951:107), who produced seven artifact categories that could be used to systematically evaluate syncretism in artifacts, such as "forms copied from introduced models, but reproduced locally of native materials" and "native artifacts modified by the substitution of an imported material." This scheme has since been utilized without major modification by a number of authors, including VanStone (1968, 1970, 1971, 1972), and revised versions that attempt to further systematize the scheme have been developed by Cheek (1974), Farnsworth (1987, 1989a, 1989b), Sabo (1979, 1991), Smith (1987), White (1975), and others (see also Brain 1979).

Acquisition of new technologies can have a variety of effects. The introduction of the rifle to the Arctic may have increased hunting success and also may have opened up previously uninhabitable areas, as in the case of the Caribou Inuit (cf. Burch 1986; Clark 1977, 1979). It is important in discussions of technological change, however, to avoid an automatic assumption that the introduced European technology or subsistence system is superior to the indigenous one or that it will have a lasting effect (Hester 1989; Ray 1975; Scarry and Reitz 1990; Townsend 1983). Likewise, dependence of indigenous people on agents of the European world-economy cannot be assumed. Rather, each instance must be assessed on its own merits, as it was often the case that European colonial agents were dependent on indigenous peoples for food (e.g., Gibson 1978; Nuligak 1966).

Ecological Approaches

A number of approaches to intersocietal interaction could be considered ecological or environmental in nature. Environmental factors as basic as physical geography directly affect the process of interaction, as when the remoteness and inhospitable nature of the North American Arctic and Subarctic delayed direct contact between Europeans and indigenous peoples, thus resulting in a relatively long period of indirect contact (e.g., Fitzhugh 1985a:19; Francis and Morantz 1983:167). Because land was unsuitable for agriculture, European pressure to displace indigenous people was much less intense than in more southern regions (Eccles 1983). Likewise, the presence of precious metals within the Aztec and Inca empires undoubtedly contributed to the rapid and violent conquests of these realms (Wolf 1982). Environmental constraints on interaction have also been inferred from the precontact record. For example, regional variation in resources may have provided impetus for increased interaction among precontact northwestern Alaskan societies (Hickey 1976), whereas on the Alaska Peninsula, zones particularly poor in ecological production

produced barriers to interaction (Yesner 1985). In the realm of hunter-gatherer studies, a particularly important intersection of ecology with interaction is the widespread interpretation that hunter-gatherers maintain networks of interaction in order to buffer periodic resource shortages; people can move to visit friends, partners, or relatives in adjacent territories that may not be experiencing similar shortages (e.g., Jochim 1998; Kelly 1995; Whallon 2006).

More formal ecological approaches include Barth's (1969) delineation of four types of interaction: (1) stable interaction in which populations occupy clearly distinct niches, resulting in minimal competition; (2) stable interaction in which populations monopolize separate territories with similar niches, resulting in articulation along borders; (3) stable interaction in which populations occupy reciprocal and different niches, resulting in close interdependence or symbiosis; and (4) unstable interaction in which two or more groups compete within a single niche. Each type of ecological interaction is seen as a constraint on the nature of social interaction, although Barth (1969) believed that in most cases, some combination of the four types will occur.

Gregg (1988) defined interaction in terms of ecological populations and differentiated between "mutualism" and "competition" in her model of interaction between farmers and hunter-gatherers in Early Neolithic Europe. The model was originally intended to explore the possibility that these interactions were based on some form of mutualism (cooperation), rather than on expulsion, acculturation, or avoidance, which are often assumed to have characterized the nature of Neolithic-Mesolithic relations. Likewise, Spielmann (1986, 1989, 1991) used ecological theory to dichotomize cooperative interaction as "buffering" vs. "mutualism," in reference to interaction between hunter-gatherers and agricultural societies in southwestern North America. Buffering refers to strategies designed to overcome periodic shortages, whereas mutualism refers to strategies that are more embedded and that are beneficial to both populations. Binford (2001) expanded the understanding of conditions under which mutualism will exist among hunter-gatherer societies.

These ecological approaches, although presenting sophisticated models, are often difficult to test against archaeological and paleoenvironmental data (Spielmann et al. 1990; Tringham 1991). A likely reason for this difficulty is that ecological relations, although important, are only one of a number of variables that may significantly influence the nature of intersocietal interaction. Others include technology, population density, social structures, ideology, and historical trajectories of participating societies. Nevertheless, environmental and ecological factors must be seen as critical to the study of interaction of any magnitude, from small-scale hunter-gatherers to modern globalized society.

Social Approaches

By its very nature, interaction is social: It affects, is affected by, and flows through social formations and phenomena of every type and scale. In this connection, a number of archaeological studies stress the role of particular aspects of social organization in intersocietal interaction. Changes in political organization brought about by interaction are often manifested in altered settlement patterns, as in the case of the collapse of chiefdoms with associated hierarchical settlement patterns in the southeastern United States following epidemics (Ramenofsky 1987) and conflict with Spaniards (Blakely and Matthews 1990). Sites became fewer in number, with a much smaller range of variation in size and elaboration, indicating abandonment of the hierarchical chiefdoms that existed before contact (Brain 1988; Smith 1987). Political complexity can also increase as a result of contact. In Iron Age Europe, an increase in size and complexity of sites has been interpreted as a result of competition among elites for control of trade with the Mediterranean (Wells 1980a, 1980b, 1985).

Sociopolitical change resulting from interaction can also be manifested in an increased frequency and intensity of alliances among groups (e.g., Burch 1979; Guemple 1972) or in amalgamation of previously separate indigenous groups (e.g., Purdy 1988), as a response to external aggression. In addition, nucleation of various populations such as occurred around trading establishments can result in competition and intense interaction between different indigenous groups that would otherwise have remained separate (Brumbach et al. 1982:4).

The social roles of different age sets, genders, classes, and ethnic groups are critical to an understanding of interaction. Among some aboriginal Australians, for example, the breakdown of the gerontocracy is clearly linked to contact with Europeans (Sharp 1952). Gender has emerged as a critical variable that can condition the nature of contact and also change because of that contact (e.g., Broom et al. 1954; Deagan 1985; Farnsworth 1989a; Frink 2007, 2009; Hodder 1990; Jarvenpa and Brumbach 2006; Nassaney 2004; Redfield et al. 1936; Sharp 1952; Trigger 1985). Archaeologically, the extent of changes in gender roles and statuses can be observed in several data classes, including the rate of change of specific artifacts associated with the two genders (e.g., Farnsworth 1989a; Stevenson 1984), the size, location, and number of archaeological features (e.g., Frink 2007), and the spatial distribution of activities (e.g., Deagan 1983). Finally, a consideration of the complex and multifaceted manifestation of ethnicity and class has come to the fore in a number of recent studies of interaction (e.g., Crowell 1997; Lightfoot 2005; Lightfoot et al. 1998; Voss 2008).

In some cases, the relative statuses of individuals can also change because of intersocietal contact. Traditional paths toward status, such as knowledge and experience gained through age, can be overturned by the ability of lower-status individuals to gain power through differential access to trade goods, or through wage labor. Although these status changes tend to be most easily observed in terms of mortuary practices (e.g., Wells 1985), they have also been inferred from architectural form. For example, in Labrador the appearance of multifamily longhouses has been interpreted as a response to Euroamerican trade, in which individuals clustered around "wealthy" independent Inuit traders who amassed economic wealth and prestige (Jordan 1978; Kaplan 1985a, 1985b; cf. Schledermann 1976).

The functional context of introduced material culture can also reveal changing social organization. Okun's (1989) study of changing ceramic frequencies that resulted from Roman interaction with indigenous people on the Upper Rhine suggests an increase in status differentiation, indicated by a shift from communal to more individual food vessels. Dietler (1989, 1990) has analyzed the imported artifacts from Iron Age European sites and has found that a large number of them are closely linked to the drinking of wine. Through a cross-cultural examination of the social uses of alcohol, he developed a convincing model wherein elites used imported alcohol to manipulate political statuses and to symbolize their positions. Whereas the presence of these cups and amphorae had previously been interpreted merely as indications of contact, the revelation of their functional context has yielded new insights into social change.

Ideological Approaches

A number of studies attempt to consider the role of ideology (religion, worldview, ritual, and related concepts) in the process of interaction. Initially, it must be emphasized that change in other aspects of culture does not necessarily imply similar levels of change in ideology. For example, Remie (1983) reported that among the Inuit of Pelly Bay, traditional religion was resilient, and that it went "underground" in reaction to the ideological onslaught of local missionaries. This is opposed to Nooter's (1972–1973) observation of Greenlandic Inuit, who appeared to retain traditional technology and yet to accept new ideas. In a similar vein, in the case of two indigenous groups in southeastern New England, Bragdon (1988) has shown that the degree of material acculturation varied inversely with the degree of change in other cultural features, such as language and political organization.

Translating ethnographic observations such as these into the archaeological record is difficult, because the simple presence of an artifact on a site does

not indicate all aspects of its *meaning* to the site's occupants (Adams 1974; Sharp 1952). Van der Leeuw (1983:37) has drawn a distinction between the intersocietal transmission of information and meaning. He suggests that the former may be approximated, but that archaeologists are poorly trained to deal with the latter. In general terms, an introduced artifact must either replace an existing artifact or constitute a new category (replacement vs. addition); in either case it is unlikely that the artifact will be considered in exactly the same fashion as it was in the donor society (Brown 1979).

Introduced materials often carry with them meanings beyond their potential technological advantage. Certain artifacts, such as metal harpoon endblades replacing slate ones, probably fit into preexisting cultural contexts and may not require much alteration of existing structures. Other artifacts, on the other hand, may have carried with them immediate and major ideological implications, as in the case of bronze objects in Bronze Age northern Europe (Sorensen 1987) or artifacts associated with tea drinking in Alaska (L. Jackson 1991). Crosby (1988) has shown that for native peoples in southern New England, European material culture and ideas were incorporated into preexisting ideas of "manit," or spiritual power.

In some cases, the meaning of an artifact may be indicated by its archaeological context, as when imported goods function as status indicators in burials (Brenner 1988). Likewise, European articles manufactured of specific materials may have been differentially desired by eastern North American native peoples for their compatibility with preexisting ideological categories (Trigger 1985:126). In this context, it is important to note that native peoples often made specific demands on European traders for certain goods (Ray 1988). A more ambitious example of an ideological approach to intersocietal contact is Hodder's (1990:178 ff.) discussion of contact between Scandinavian Mesolithic cultures and their contemporaneous central European Neolithic neighbors. Hodder's study stresses the symbolic and structural organization of the two cultures as central factors influencing the rate of introduction of agriculture and related cultural attributes to Scandinavia.

Peer Polity Interaction

Renfrew (1982; Renfrew and Cherry 1986 and papers therein) defined "peer polity interaction," referring to interaction among relatively "equal" societies. A polity, according to this definition, is an autonomous sociopolitical unit that is the highest-order unit in its region and is therefore not subject to any higher power (Renfrew 1986:2–4). According to Renfrew's (1986) formulation, the concept of peer polity interaction refers to a heightened intensity of interaction between groups of autonomous polities with similar features of economy, social

structure, and ideology; they might be considered to belong to the same "culture" or "civilization." The goal of this approach is to explain increasing social and cultural complexity through this interaction, which is manifested in many ways, primary among which are warfare, competitive emulation, symbolic entrainment (adoption of external symbolic systems by societies with less-developed symbolic systems), transmission of innovation, and increased flow in the exchange of goods.

Peer polity interaction was developed in reaction to what Renfrew (1986:6) saw as an overemphasis on the study of change as a result of either external or internal change but that ignored an intermediate level of interaction among separate polities within a system or region. The theory was intended for use "primarily with reference to fairly complex societies" such as early states (Cherry 1986; Snodgrass 1986; see also Blanton et al. 1981 for an example not labeled as peer polity interaction) or chiefdom-level societies (Braun 1986; Champion and Champion 1986). This approach was specifically presented as a strategy for explaining intensification of interaction and increased complexity. In effect, the trade, competition, and transmission of innovation result in a large and rapidly changing pool of information that is available to all polities within a system. In many of these aspects, peer polity interaction closely follows Price's (1977) cluster interaction model, which invoked interaction among clusters of societies to explain shifts in subsistence technology and increased complexity of social organization.

Peer polity interaction is a potentially valuable construct, because it focuses attention on relations *between* individual societies as a source of change at a broad spatial scale. Another useful feature of the approach is the fact that it integrates a number of categories of archaeological data. Rather than concentrating solely on economy and exchange as data sets, peer polity interaction attempts to establish "structural homologies" in terms of features such as architectural form, numeric systems, and symbolic systems to indicate interconnectedness. These homologies can then be further analyzed in terms of their meanings in the process of interaction, such as indications of rivalry among governing elites of neighboring polities (Renfrew 1986).

The concept of peer polity interaction has seen continuous but infrequent application since Renfrew and Cherry's (1986) book, which launched it as an explanatory paradigm (Dark 2000; Janusek 2008; Ma 2003; Watkins 2008). This may be due to the fact that peer polity interaction was originally designed to explain interaction among a restricted range of societies, particularly those that are autonomous, relatively equal, and relatively complex (but see Mason 1998 and McCartney 1991 for application to Arctic hunter-gatherers).

World-System Theory

World-system theory was originally developed by Immanuel Wallerstein (1974, 1980, 1989) as a means of understanding the development of the modern global political economy, which is characterized by high levels of intersocietal interaction and by regionally variable degrees of wealth, political dominance, and capitalist development. The historical rise of Europe, and later the United States, as the hegemonic centers of the world's political economy is explained through the large-scale, and eventually global, capitalist economic system that arose in sixteenth-century Europe, referred to by Wallerstein (1974) as the "European world-economy." The modern world-system incorporates numerous polities (autonomous sociopolitical units) in a primarily economic, as opposed to political, relationship. This system consists of (1) the core, which is a net consumer of goods and capital, (2) the periphery, which is an exploited net producer, and (3) the semiperiphery, which is an intermediate region mediating relations between the core and the periphery. This geographic division of labor ensures that peripheral societies continue to provide labor and raw materials for the development and dominance of the core. In addition, Wallerstein (1974:302) defined the "external arena," which consists of "those other world-systems with which a given world-economy has some kind of trade relationship."

World-system theory is related to several previously developed bodies of theory, in particular Marxist and dependency theory (Hall 1989; Ragin and Chirot 1984). It shares with Marxist theory a methodology that emphasizes a historical perspective on socioeconomic change, the idea of class systems as major structural factors determining societal change, and the centrality of the institutions of capitalism for understanding the functioning of modern societies. Dependency theory, like world-system theory, was developed specifically for the analysis of interaction among modern societies, and in particular for the understanding of the "development of underdevelopment" in the modern world-economy (Frank 1966). Dependency theory differs from world-system theory in that it does not generally incorporate a historical perspective with a great time depth, and also in that its analytical unit is the individual society or nation-state (Shannon 1996:15 ff.). The central premise of the world-system perspective, on the other hand, is that only the analysis of the largest scale of social system, as opposed to its component parts, is appropriate for the understanding of social change. In the modern world-system, this means that an understanding of the entire global world-economy is necessary to account for the development of individual nation-states, regions, and other socioeconomic entities.

World-system theory has been used by archaeologists in three main ways. Its most direct use emphasizes the effects of the expanding capitalist world-economy

of the past five hundred years. Of particular interest to archaeology is the process by which indigenous groups become increasingly articulated with the expanding capitalist world-system. This process is referred to as either "peripheralization" (Chase-Dunn 1989:218) or "incorporation" (Hall 1986; Wallerstein 1978:164). The world-system approach to incorporation has been applied directly to the interpretation of contact sites in areas colonized by Europeans. Changes observed in the archaeological record can be seen to result in part from economic changes that occur because of increasing incorporation of indigenous societies into the expanding European world-economy (e.g., Alexander 1999; Crowell 1997; Deagan 1990; Farnsworth 1987, 1989a, 1989b; Gasco 1987; Hall 1986, 1989; Hoover 1989; South 1990). Of particular relevance to this book is Crowell's (1997) innovative study of the expansion of the Russian fur trade into Alaska, which invokes world-system theory to understand the complex and interdependent relationship between periphery and core.

A second archaeological use of world-system theory is in the extension of the modern world-system back in time. A number of scholars suggest that the rise of capitalism during the sixteenth century is an arbitrary starting point for the modern world-system, and that in fact its duration can be extended back by as much as five thousand years (Frank 1993; Frank and Gills 2000; Gills and Frank 1991; Kohl 1989; Schneider 1977; Wilkinson 1991). The ancient world-system differed from its modern counterpart in many ways, but it was similar in that an intersocietal system existed that displayed many of the characteristics of the modern world-system, most notably intensive and multidimensional categories of interaction and a form of center-periphery relations. Chase-Dunn (1989) recognized four central structures of the modern world-economy: a worldwide division of labor, core-periphery relations, the interstate system, and the market system. Not all of these are fully applicable to noncapitalist systems, and the structural aspect of world-system theory that has seen the broadest application to the archaeological record is the center-periphery relationship (e.g., papers in Champion 1989; Chase-Dunn and Hall 1991b; Rowlands et al. 1987). In most archaeological research, the relationship between center and periphery is perceived as a complex one that often differs from that observable in the modern world-economy. For example, Kohl (1989) found that in the Bronze Age southwest Asian world-system, ancient centers could not exert as much influence on peripheries as do their modern counterparts, because it was easier for those peripheries to withdraw or to adopt technological advances originating in the center. A more general interpretation from archaeological case studies of center-periphery relationships is that the nature of the sociopolitical organization of the peripheral society or societies, and their impacts on the *process* of in-

teraction between core and periphery, were major determinants of macrolevel political and social development (Dietler 1989; Hall 1989; McGuire 1989).

The third and final use of world-system theory in archaeology emphasizes structural elements and boundaries of world-systems. Wallerstein's original concept defined boundaries and interaction in economic terms, and in particular stressed trade in "essential" bulk goods (Wallerstein 1974:20ff.). Since that time, factors used to define world-system boundaries have expanded to include trade in "luxury goods" (Schneider 1977), political interaction (Tilly 1984), and warfare (Wilkinson 1987, 1991). These various strands eventually led Chase-Dunn and Hall (1991a) to advocate an eclectic approach to world-system boundaries, resulting in a definition of world-systems as "intersocietal networks in which the interaction (trade, warfare, intermarriage, etc.) is an important condition of the reproduction of the internal structures of the composite units and importantly affects changes which occur in these local structures" (Chase-Dunn and Hall 1991a:7). By adopting this definition, the world-system perspective can, at least in theory, be applied to societies of any scale. At this point, it is important to make a terminological distinction. For present purposes, "world-system theory" refers to the original formulation as applied to the origin and expansion of the European world-economy. The terms "world-system perspective," "world-system approach," and "world-systems analysis," on the other hand, refer to this more general framework that has its origin in world-system theory but that has been expanded and modified to make it applicable to a much broader suite of potential cases of intersocietal interaction (Kardulias and Hall 2008; Wallerstein 2004).

World-systems analysis supports an enormous and ever-expanding literature cross-cutting many academic disciplines. (For a diverse sample of studies using this approach, see the *Journal of World-Systems Research*, which has been published since 1995.) It has proved remarkably adaptable and able to incorporate or articulate with other bodies of thought in the social and natural sciences; for example, two recent substantial volumes are centered on the relationship between world-systems and the environment (Goldfrank et al. 1999; Hornborg and Crumley 2007). World-systems analysis has also been subject to a number of critiques (see Kardulias and Hall [2008] for a recent overview), of which two are the most important in the present context. First, a number of authors have pointed out that in its original form, world-system theory potentially placed too much emphasis on the importance of the "core" as the entity driving important patterns and changes in world-systems. Thus, other component societies within a world-system, particularly those in the "periphery," were relegated to a role as passive and noncreative entities lacking

agency or a significant role in the unfolding of societal change (e.g., Dietler 2005; Hall 1986; Stein 1999, 2002). Although this is a legitimate criticism of some original world-system theory publications, it does not take into account the continual expansion and reconfiguration of world-systems analysis that has gone on since then, much of which has been aimed at dealing with this particular issue (Chase-Dunn and Hall 1997; papers in Frank and Gills 1993; Hudson 2004; papers in Kardulias 1999; Kardulias 2007). As elaborated below, the present research attempts to continue this process of rethinking aspects of the nature of "peripheries," and how to characterize them.

A second set of critiques stems from a perception that the world-system perspective is too general, leading to a tendency to homogenize divergent local situations (e.g., Gosden 2004:17), or a loss of explanatory power (Stein 1999). This parallels a broader trend in archaeological interpretation away from generalizing explanatory frameworks toward those that emphasize more local and particular histories, factors, and processes. The position taken here is that world-systems analysis, incorporating all the modifications of the past few decades, provides a uniquely appropriate set of building blocks to study how human societies interact at their largest spatial scale, but at the same time, its use must be tailored to the specifics of the case at hand (as is the case for the application of any other generalizing body of theory to the archaeological or historical record). In fact, one of the main reasons to employ world-systems analysis is that it *forces* the researcher to consider the largest spatial scale of interaction. This is important, because the nature of archaeological data collection, analysis, and interpretation often pushes the researcher to *think* at smaller scales.

World-Systems Analysis as a Framework for the Archaeological Study of Interaction

Most archaeological studies of interaction, including many of those already discussed here, could be classified as particularist in nature in that they attempt to understand the nature of interaction for a specific society or region, at a specific time. In particular, recent studies often focus on the complexities of "contact" or "interaction" contexts, emphasizing the roles of agency, identity, labor, gender, ethnicity, and environment, among other factors, in the production of "hybrid" or otherwise complex social entities (see papers in Cusick 1998b for a cross-section of approaches). These studies have yielded many important insights into the process and dynamics of interaction, as well as the articulation of individuals, households, interest groups, communities, and regional groups with others, and there is no doubt that a detailed understanding

of the local context is critical to a full understanding of regional histories. Indeed, one of the goals of this book is to understand the particular history of Inuvialuit cultural development over the last few centuries.

However, this book was also motivated by a conviction that the process of interaction is *itself* in need of further study and conceptual development, particularly as it relates to social change in small-scale societies. Given this, world-systems analysis provides an appropriate jumping-off point, for three primary reasons. First, world-systems analysis was explicitly formulated as a means of studying social change as a function of intersocietal interaction. A central premise of the world-system perspective states that social change within any society is constrained by, and therefore must be understood in terms of, the broader context of its interaction with other societies. This broader context is termed the "world-system" of interacting societies, be they nation-states or less complex polities. By characterizing these world-systems in terms of their boundaries and the nature and frequency of internal structures and relationships, a basis for understanding exogenous change can be realized. This approach is by definition eclectic (Chase-Dunn and Hall 1991a) and allows a range of factors and approaches to be brought to bear on the analysis of interaction.

Second, world-systems analysis, as recently reformulated, can accommodate interaction between a wide range of societies, from relatively "equal" interindigenous interaction to "unequal" indigenous-Euroamerican interaction in colonial contexts. Likewise, it can accommodate both long-term patterns of interaction and rapidly changing or newly formed ones. These qualities differentiate this body of theory from many other, more specific frameworks. For example, peer polity interaction (Renfrew 1982, 1986; Renfrew and Cherry 1986) is limited to the study of interaction between relatively "equivalent" societies that are the highest-order unit in their region. Thus, it is inappropriate for analysis of some of the episodes of interaction that occurred between diverse hunter-gatherer groups, or between hunter-gatherers and horticulturalists or state-level societies. Acculturation theory (Broom et al. 1954; Herskovits 1938; Redfield et al. 1936), on the other hand, is not appropriate for the investigation of societies that have been involved in long-term contact, because generally it is applied to previously separate societies. During the period covered by this book, a number of intersocietal relationships existed that do not fit neatly into an acculturation framework, such as the one that existed between the Inuvialuit of the Mackenzie Delta region and the North Alaskan Iñupiat.

Third, if world-systems analysis is applied with care, it can allow one to avoid a Eurocentric approach to intersocietal contact. This statement is counterintuitive, and deeply ironic, given the fact that world-system theory was originally intended as a framework for understanding the development of

Europe as the center of the world-economy. However, world-systems analysis allows the European world-economy to be defined on an equal theoretical footing with other world-systems, including small-scale indigenous world-systems, while recognizing their differences in terms of internal structure and scale (e.g., Schneider 1977:22).

In the following sections, two aspects of world-systems analysis that are important for this book are elaborated on: (1) the process of incorporation, whereby previously external societies become "absorbed" by the expanding world-economy; and (2) the application of world-systems analysis to smaller-scale, precapitalist societies.

The Process of Incorporation in the World-Economy

Clearly, the European world-economy has expanded to the point where it is global, and it incorporates a profound degree of interaction among all modern societies. This expansion has occurred through the parallel processes of "broadening" (increasing in geographic extent) and "deepening" (increasing in degree of interdependency among societies within the world-economy) (Shannon 1996:128–131). The expansion of the capitalist world-economy of the past five hundred years has been studied by archaeologists in many contexts, and some of the major figures in historical archaeology have defined their subdiscipline in terms that echo world-system theory. For example, Deetz (1991:1) has written that historical archaeology is "the archaeology of the spread of European societies worldwide, beginning in the fifteenth century, and their subsequent development and impact on native peoples in all parts of the world." Likewise, South (1988:27) contends that "a major goal of historical archaeology should be to understand world cultural systems and the process of their operation, as they exploit the available energy resources through class distinctions" (see also Deagan 1990; Orser 1996).

Of particular importance to this book is the process of incorporation (Hall 1986; Wallerstein 1978:164), in which indigenous societies living in previously external regions become increasingly articulated with, and eventually dependent on, the expanding European world-economy. Incorporation is highly variable and affects each indigenous society to different degrees and at different rates. Echoing earlier considerations of the process of acculturation, many variables can be seen to affect incorporation, with two of the most important being the relative strength of the core polity and the nature of the sociopolitical organization of the incorporated polity (Hall 1989). Some types of incorporation are reversible, although there is a general trend in the development of the European world-economy toward greater incorporation and eventually to all polities becoming fully developed peripheries.

The world-system approach to incorporation has been applied directly to the interpretation of contact sites in a number of areas colonized by Europeans. Changes observed in the archaeological record have been interpreted as the result, in part, of economic changes that in turn arise from the increasing incorporation of indigenous societies into the expanding European world-economy. For example, Alexander (1999), Crowell (1997), Deagan (1990), Gasco (1987), Hall (1986, 1989), and Hoover (1989) have used archaeology to elucidate the role of indigenous societies in determining the process of incorporation in the Yucatan, Alaska, Florida, Soconusco, the southwestern United States, and California, respectively. Taking a slightly different tack, Farnsworth (1987, 1989a, 1989b) has analyzed the influences of the European world-economy on the process of missionization in California, concluding that the initial decision to establish missions, as well as the later change from a "missionizing" to an economic role for the missions, resulted directly from Spain's changing relationship with Britain and Russia. The cases cited above represent those in which archaeological data are used to supplement the relatively rich documentary records from the same regions; many other examples exist that are based exclusively on written records (e.g., Dunaway 1994; Martin 1987; Palat et al. 1986; Phillips 1987; Schmidt 1993; C. Smith 1984; So 1984). In addition, a further suite of papers applies world-system approaches to incorporation to understand the process in earlier instances of colonization or expansion of world-systems, such as in Uruk-period Mesopotamia (Algaze 1993), Iron Age Greece (Morris 1999), and the Roman Empire (Wells 1999).

A common theme suggested by many of these studies of incorporation is that Wallerstein's conception of areas with low levels of interaction with the world-economy requires elaboration. Because Wallerstein was interested primarily in the operation of the European world-economy, processes occurring outside of its strongly peripheralized zones were less important to the overall model. This shortcoming has largely been overcome by Hall (1986, 1989), who has reinterpreted the periphery and the external arena to make them better reflect the variable nature of the process of incorporation as experienced by indigenous peoples. Hall's (1989:20) model replaces Wallerstein's "periphery" and "external arena" with four finer-grained designations defined in relative terms on the basis of degree of market articulation (type, amount, and importance of exchange with the world-economy). (See Table 1.)

In Hall's model, areas completely external to the world-economy are in the "external arena." This definition differs significantly from Wallerstein's (1974), which perceives the external arena as engaging in some exchange with the world-economy. Areas "where contact has barely occurred" (Hall 1989:19) are labeled the "contact periphery." This zone, while still having a relatively

Table 1. Comparison of Three Classification Systems for the Process of Incorporation

Strength of Incorporation	None	**Slight**[1]	Weak	Moderate	Strong
Market Articulation	None	**Slight**	Weak	Moderate	Strong
Impact of Core on Periphery	None	**Weak**	Strong	Stronger	Strongest
Impact of Periphery on Core	None	**Slight**	Low	Moderate	Significant
Type of Periphery (This Study)	**External Zone**[2]	**Autonomous Zone**	**Contact Periphery**	**Marginal Periphery**	**Dependent Periphery**
Type of Periphery (Hall 1989)	External Arena		Contact Periphery	Marginal Periphery/ Region of Refuge	Full-Blown Periphery/ Dependent Periphery
World-System Terminology (Wallerstein 1974)	External Arena			Incorporation	Peripheralization

Table by author, after Hall (1989:20).

1. Bold text represents additions to Hall's (1989:20) model.

2. The term "external zone" is used to differentiate the current definition from Wallerstein's (1974) and Hall's (1989) previous definitions of "external arena."

weak link with the world-economy, is considered to be strongly affected by the core. A zone experiencing a moderate degree of market articulation is referred to as the "marginal periphery." In practice, these are regions in which major changes occur in local socioeconomic organization while the affected societies maintain a degree of autonomy and self-determination. Finally, the "full-blown periphery" or "dependent periphery" represents the culmination of the incorporation process, in which the region (1) is fully articulated, both economically and politically, with the world-economy and (2) has become important to the functioning of other parts of the world-economy.

Although Hall's model of incorporation represents a major step toward an understanding of the incorporation process, it does not fully reflect the potential for variability in the initial stages of incorporation. Readily observable in Table 1 is the fact that the impact of the core on the periphery increases from "none" to "strong" between the external arena and contact periphery. Hall's (1986:392, citing Wolf 1982) example of a contact periphery is that of the North American fur trade, which had significant effects on indigenous societies but which was not yet vital to European economies. However, on logical

grounds, and on the basis of archaeological case studies, other instances can be assumed to exist in which some contact is evident but for which major effects on the indigenous society cannot be assumed. For example, before increased penetration of European trade goods in the seventeenth century, small-scale exchange through intermediaries brought Asiatic or Norse metal to Thule Inuit sites in the central Canadian Arctic (McCartney 1988, 1991). However, it is not clear that this exchanged material had a "strong" impact on Thule society, as metal was used largely for utilitarian purposes, and alternative materials, particularly ground slate, continued to be used alongside their metal counterparts (McCartney 1988, 1991). In addition, a range of other "exotic" trade goods ranging from ivory and native copper to meteoritic iron were exchanged in the same patterns as were European goods (Whitridge 1999).

To account for the presence of groups that have only minimal contact with the world-economy (usually through long-distance exchange occurring through intermediate societies), in this book Hall's (1989) category of "external arena" has been subdivided into the "external zone" and the "autonomous zone." The external zone refers to areas that have no observable interaction of any kind with the world-economy. This category has been labeled "external zone" rather than "external arena" in order to avoid confusion with the two previous definitions of the latter term. The autonomous zone refers to regions that engage in small-scale, indirect interaction with the world-economy but for which the effects of the core on the periphery are minimal. (See Figure 1.) An additional reason to employ this category is to avoid the ethnocentric assumption that radical societal change is inevitable as soon as some form of contact is initiated (Solway and Lee 1990:122).

To reiterate, this model divides the process of incorporation into five "types" or "stages." These range from the external zone, in which there is no contact of any type with the world-economy, through to a "dependent" periphery, which is a fully functioning part of the world-economy. Between these two endpoints are three other designations, which represent relative degrees of incorporation. Of course, determination of where actual cases fit into this scheme is subject to interpretation and will not always be easy; this is an unavoidable aspect of any general model. Summaries of the degree of interaction manifested in these five types follow:

External Zone. Societies in this category engage in *no contact* with the world-economy. They exist as parts of smaller world-systems completely external to the world-economy. No measurable exchange or contact occurs between the world-economy and the external zone.

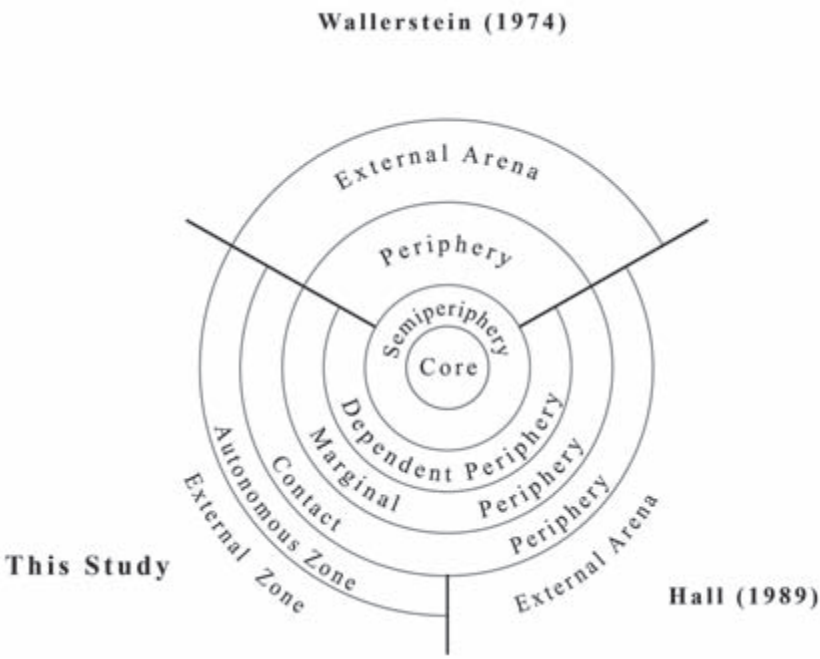

FIGURE 1. Schematic comparison of three classification systems for the process of incorporation. (Illustration by Matthew Walls based on original in Friesen 1995.)

Autonomous Zone. A low level of interaction occurs between the indigenous society and the world-economy, usually in the form of exchange through intermediaries. Goods exchanged are usually "preciosities" (goods with a high value per unit weight; Schneider 1977) and not bulk goods. No major changes are observable other than those directly associated with this low level of exchange. For example, subsistence systems, settlement patterns, and social structures internal to indigenous societies do not change significantly.

Contact Periphery. Increased contact is evident, either in the form of occasional direct interaction with agents of the world-economy or through a higher frequency of indirect interaction, with exchange for preciosities still usually predominating. This contact causes significant changes in indigenous societies beyond the mere presence of trade goods. For example, settlement patterns may be altered in order to increase access to incoming trade goods, increase access to commodities destined for export, or both; and acquisition of growing numbers and types of preciosities may be used by emergent elites to heighten or solidify status differences. It is significant that, in a contact periphery, the

indigenous society engages in interaction by choice and has not yet grown dependent on the world-economy.

Marginal Periphery. This stage sees regular and direct interaction between agents of the world-economy and the indigenous society. A degree of dependency begins to develop on the part of the indigenous society, often due to active efforts of the agents of the world-economy. Types of interaction other than exchange should be evident, including movement of people and ideas.

Dependent Periphery. This stage represents the consolidation of the periphery into the capitalist world-economy. There is now a high degree of interaction with a profound dependence of the periphery on the core, and with the periphery having a significant impact on the core. In other words, withdrawal from the interaction by either core or periphery would have major consequences on the periphery and a noticeable effect on the core.

Application of World-Systems Analysis to Precapitalist Societies

Wallerstein (e.g., 1991) recognized the potential for the application of world-system theory to intersocietal networks existing earlier than or external to the European world-economy. In this regard, it is important to note that a world-system (with the hyphen) does *not* necessarily refer to a system that is worldwide in geographic extent. It "is not a system 'in the world' or 'of the world'. It is a system 'that is a world' " (192). In other words, "world" is used in the sense of "the world in which people live and which is important to their lives" (Chase-Dunn and Hall 1991a:34, note 1). Wallerstein (1975, 1978) classified all past and present sociopolitical systems into three broad categories: mini-systems, world-empires, and world-economies. A fourth hypothesized system, a socialist world government (Wallerstein 1974:348) has yet to manifest itself. World-empires are differentiated from world-economies by the fact that there is central political control in the former, whereas the latter are primarily economic systems of interaction between politically independent societies. Wallerstein's (1975) attention to "reciprocal mini-systems" is particularly negligible because of his concentration on the capitalist world-economy. These smaller systems generally are mentioned only in passing as they intersect with the expanding world-system.

Despite Wallerstein's recognition that aspects of world-system theory apply to systems other than the capitalist world-economy, he has been criticized for too narrow an application of his own body of theory (Schneider 1977). This lack of attention to noncapitalist systems has been countered by a number of authors who believe that aspects of world-system theory can be applied to a

broader range of societies in two primary ways. First, the modern world-system can be extended back in time. Many authors have argued that one should not arbitrarily place the beginning of the modern world-system at the origins of capitalism during the sixteenth century. Rather, they believe there has been a single preeminent world-system, incorporating shifting cores and peripheries, for up to five thousand years (Abu-Lughod 1989; Algaze 1993; Amin 1991; Edens 1992; Frank 1993; Frank and Gills 2000; Gills and Frank 1991; Kohl 1989; Modelski and Thompson 1999; Ratnagar 2001; Sanderson 2000; Schneider 1977; Wilkinson 1991). Although the ancient world-system differed from its modern counterpart in a number of respects such as overall scale, frequency of economic exchange, and degree of control that the center could exert on the periphery (Kohl 1989), it was similar in that a recognizable system existed, which required intense interaction in the form of exchange and information flow in order to maintain the internal structures of its component societies.

A second approach to precapitalist world-systems attempts to define internal structures and external boundaries of different types of world-system and, as outlined above, is best referred to as "world-systems analysis" (Chase-Dunn and Hall 1991a, 1993, 1997; Hall and Chase-Dunn 1993; Kardulias and Hall 2008). This approach recognizes that human societies of all types and scales are parts of broader interaction networks, and it seeks to characterize and classify these networks in order to understand social change within their component societies. Individual societies can be parts of multiple types and scales of network, with four particularly important types of network being those relating to bulk goods exchange, prestige goods exchange, political-military exchange, and information exchange (Chase-Dunn and Hall 2000).

Summary

Archaeologists have applied a wide range of approaches to the study of past intersocietal interaction. One of these approaches, world-system theory, has recently been expanded in a way that provides a common structure for the study of many types and scales of interaction. In the next chapter, aspects of world-system theory will be expanded and modified to create a model of how hunter-gatherer interaction networks are organized, why they change, and how they can be recognized in the archaeological record.

3

Hunter-Gatherer World-Systems

HUNTER-GATHERERS INTERACT FOR THE SAME REASONS that all other societies do. They seek economic security, marriage partners, the defense and well-being of their families and allies, social status, and an understanding of the world around them. An extensive literature exists on all of these aspects of hunter-gatherer interaction, in both ethnographic and archaeological contexts; however, generalizing considerations of the topic that seek to characterize regularities and understand common factors influencing variability among them are rare.

This chapter seeks to erect a general framework for hunter-gatherer interregional interaction, under the rubric of world-system theory. At the outset, it is important to note that on the basis of the considerations outlined in Chapter 2, Chase-Dunn and Hall (1991a:23) constructed a typology of world-systems built largely on Wolf's (1982:73–100) revision of the concept of "mode of production." Three broad types of past and present world-system are founded on the dominant mode of production within their bounds: kin-based (based on consensual kinship-based production and distribution); tributary (based on state-level control of production and distribution through coercive force); and capitalist (based on the commodification of goods, land, labor, and wealth through the institution of price-setting markets). Each of these categories is further subdivided into finer-grained classifications referring to more specific types of world-system. (See Table 2.) According to this typology, the smallest-scale world-system type is composed of semisedentary foragers, horticulturalists, and pastoralists.

Of central importance to this book is the explicit exclusion of less sedentary "nomadic" (i.e., highly mobile) foraging bands from the world-system typology. This exclusion is based on the assertion that their systems of interaction consist of "a series of overlapping networks each with a band at the center . . . [while more sedentary foragers] defined communal territorial boundaries and engaged in regularized intergroup relations that can be analyzed as

Table 2. Chase-Dunn and Hall's Typology of World-Systems

I. Kin-based mode dominant
  A. Stateless, classless
    1. Semisedentary foragers, horticulturalists, pastoralists
    2. Big-man systems
  B. Chiefdoms (classes but not true states)

II. Tributary modes dominant (true states, cities)
  A. Primary state-based world-systems (Lower Mesopotamia, Egypt, Indus Valley, Ganges Valley, China, Mexico, Peru)
  B. Primary empires in which a number of previously autonomous states have been unified by conquest (Akkad, Old Kingdom Egypt, Magahda, Chou, Teotihuacan, Huari)
  C. Multicentered world-systems composed of empires, states, and peripheral regions (Near East, India, China, Mesoamerica, Peru)
  D. Commercializing state-based world-systems in which important aspects of commodification have developed but the system is still dominated by the logic of the tributary modes (Near East, Indian Ocean, China)

III. Capitalist mode dominant
  A. The Europe-centered subsystem since the sixteenth century
  B. The global modern world-system

After Chase-Dunn and Hall (1991a:23).

composing small world-systems of interdependent interaction" (Chase-Dunn and Hall 1993:868; but cf. Chase-Dunn and Mann 1998:21). This exclusion seems arbitrary and is unwarranted on two grounds. First, Chase-Dunn and Hall's (1991a) own definition of world-systems is inclusive of all networks of social interaction, no matter how ephemeral. Second, degree of sedentism does not necessarily correlate with degree of regularized intergroup relations. Rather, it is clear that *all* hunter-gatherers interact with their neighbors, and that hunter-gatherer societies all exist at some point on continua between fully mobile and fully sedentary and between those with relatively flexible boundaries and those with well-defined territories. Thus, we cannot assume that there is a cutoff point at which interaction suddenly becomes an order of magnitude greater or more important to members of participating groups.

Therefore, a central assertion here is that all human societies, including mobile hunter-gatherers, can be seen as components of world-systems, as already defined herein. This extension of the definition of world-systems to even the smallest scale of human society has important implications for its potential utility in understanding past human social change. Two examples relating to critical transitions in global culture history can illustrate this point. First, it is worth exploring the possibility that the emergence of behaviorally modern humans is associated with the origin of interaction networks that can

be characterized as "world-systems." This is suggested by the fact that recent scholarship on the origin of behaviorally modern humans often incorporates consideration of at least two phenomena that relate to interaction: long-distance exchange of exotic materials, and signaling of group identity through artifact form (Henshilwood and Marean 2003; Kusimba 2005; McBrearty and Brooks 2000). A second example is in the emergence of "affluent" or "complex" hunter-gatherers, a phenomenon associated with social hierarchies, increased territoriality, and often complex patterns of exchange, warfare, group identity signaling, and intergroup marriage patterns (e.g., Arnold 1996; Price and Brown 1985; Sassaman 2004). By reconceptualizing *all* hunter-gatherers as functioning within the context of world-systems, and comparing world-systems of "complex" and noncomplex hunter-gatherers, researchers might gain insight into the role of large-scale interaction in the development of hunter-gatherer complexity.

Appropriate Units of Analysis

Before hunter-gatherer world-systems can be defined, some thought must be given to the appropriate units of analysis, considering the fact that world-systems are defined in terms of interaction among multiple social units. Unlike modern nation-states, ethnographically defined groups cannot be assumed to conform to the definition of component units in world-systems as outlined above; rather, this question must itself be a subject of inquiry.

Hunter-gatherer "culture areas" cannot be characterized as logical units for world-systems analysis, because most are large enough to contain many relatively autonomous groups that do not interact with each other, directly or indirectly, with any frequency. For example, interaction between later precontact residents of Baffin Island and North Alaska cannot be considered important for the reproduction of internal structures in either society, despite the fact that these two are in the "Arctic grand culture area" (Kroeber 1939) and share many aspects of language and culture. These "culture areas" also cannot be considered independent world-systems themselves, because interaction does not stop at culture area boundaries; rather, groups at the edges of culture areas interact with neighbors in adjacent culture areas, as when Iñupiat interacted with Athapaskans in North Alaska (Burch 2005) or peoples of the Great Basin traded with those from California (Hughes 1994).

At the other end of the scale, small coresident groups usually cannot be considered autonomous or self-defined social or political entities in the world-system sense. A careful reading of the ethnographic record of almost any

hunter-gatherer society indicates smaller groups are organized into larger units, which see more intensive interaction *within* them than with other such groups. Therefore, large culture areas and smaller coresident groups rarely, if ever, constitute either world-systems or logical units of world-systems analysis.

In addressing this question of appropriate units of analysis of small world-systems, Chase-Dunn and Hall (1991a:16) have advocated a "group-centric" approach that uses an ethnographically characterized society as the unit of analysis and observes relations within and between these units. Although this idea has merit, it requires clarification based on two potential shortcomings. First, ethnographically defined units are not always directly comparable to one another because they vary in scale and in degree of internal differentiation. Some may be small, tightly bounded units, such as the nineteenth-century Inughuit ("Polar Inuit"; Gilberg 1984), whereas others might be larger, with more internal differentiation, such as the Inuvialuit (D. Smith 1984). To carry this one step further, one can ask what level of ethnographically defined unit should be utilized. A culture area, such as the "Eskimo culture area" with a population of tens of thousands? A regional population, such as the Copper Inuit of the central Arctic, numbering about eight hundred? One of the Copper Inuit "maximal bands" seen at winter aggregations, averaging about a hundred? Or one of the smaller named subunits of Copper Inuit society identified with fall gathering sites, which averaged about forty-five people (Damas 1984)? The choice of any of these four options will produce radically different patterns if used as units in an analysis of intersocietal interaction (cf. Gamble 1999:32–64).

The second shortcoming results from the fact that the ethnographic record is limited in scope and in most cases is a product of interaction of hunter-gatherer groups with other societies, and therefore it cannot be considered representative of all possible hunter-gatherer systems (e.g., cf. Ames 2004; Headland and Reid 1989; Schrire 1984; Wobst 1978). Because the time depth of many ethnographic groups is not known, their boundaries and social structures cannot be thrust uncritically onto the archaeological record. Rather, that record must be assessed independently for indications of change or stability through time in terms of patterns of interaction.

As a result of these considerations, the concept of the "regional group" (Burch and Correll 1972) will be used here as the basic unit that makes up hunter-gatherer world-systems. The regional group corresponds to the "maximum band" that Wobst (1974:151) suggests as the "natural analytic unit in the investigation of Pleistocene cultural processes." Regional groups incorporate populations averaging five hundred individuals, with a significant degree of variability around this mean (Birdsell 1968; Gamble 1986). Regional groups are associated with a home territory (Burch and Correll 1972:21), although the

degree to which these territories represent socially integrated, defended entities varies (e.g., Steward 1968:334). Members of a regional group may never all meet at a single face-to-face aggregation; rather, smaller groups within the regional group often form the core of day-to-day social and economic activities. Perhaps the most detailed analysis of the nature of ethnographically documented regional groups is Burch's (1980, 1998, 2005, 2006) concept of "societies" or "nations" as applied to the North Alaskan Iñupiat, which refers to integrated social, economic, and territorial systems. *Within* these societies, intense and frequent interaction in the form of visiting, intermarriage, sharing, and redistribution occurred. Despite a relatively high degree of self-sufficiency, interaction *between* societies occurred in the form of exchange, alliances, conflict, and dispersal and migration in times of famine. To reiterate, these regional groups are not equivalent to world-systems; rather, *networks of interacting regional groups* make up world-systems.

A Model of Hunter-Gatherer World-Systems

On the basis of the admittedly limited ethnographic record, then, a model of hunter-gatherer world-systems can be developed. This model is based on the central hypothesis that although hunter-gatherer regional groups are relatively autonomous, they are interdependent to the degree that they are not viable in the long term without interaction with neighboring regional groups (e.g., Burch 1980; cf. Gamble 1986:51). That is, day-to-day economic activity relates primarily to direct production of food and material culture for internal consumption or use by individuals and families who are parts of local or regional groups. Furthermore, social interaction in the form of visiting, redistribution, and acquisition of marriage partners usually occurs mainly within the regional group. However, although each regional group relies primarily on its own members, in almost every case interaction is maintained with neighboring groups for a range of purposes, from economic safety (aid during "hard times," acquisition of environmental or other subsistence-related information, trade in bulk goods) to social reproduction (conflict avoidance, acquisition of marriage partners, acquisition of exotic goods to reinforce internal social ranking). It is the nature of these varying forms of interaction that defines the world-system.

Chase-Dunn and Mann (1998) have discussed many aspects of small-scale world-systems as they apply to sedentary and territorial hunter-gatherers, and they compare them to other, more complex social formations. Despite the fact that their formulation excludes smaller-scale hunter-gatherers, their discussion, particularly of spatial boundaries and of the types of interactions that define

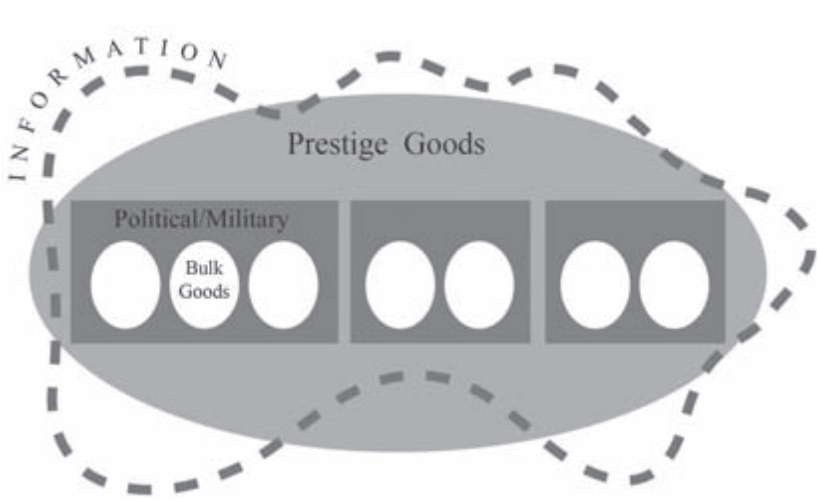

FIGURE 2. Chase-Dunn and Hall's model of four overlapping types of exchange networks that can be used to determine world-system boundaries. (Redrawn from Chase-Dunn and Hall 2000:90; illustration by Matthew Walls.)

these world-systems, is relevant here. Chase-Dunn and Mann (1998:10–14) have identified world-systems as consisting of four categories of exchange networks nested at different scales (see Figure 2; see also Chase-Dunn and Hall 2000). From smallest to largest, the scales are (1) the *bulk goods exchange network*, involving movement of materials of relatively low value by weight, such as many categories of food; (2) the *political-military exchange network* involving conflict and alliance; (3) the *prestige-goods exchange network,* which sees exchange of materials of high value by weight, such as metal, shell, or exotic stone; and finally (4) the *information exchange network*, which can involve transmission of information of various forms over great distances. Because of variability, it will not always be clear which of these four scales best approximates the actual world-system in a particular case, although Chase-Dunn and Mann (1998:12–14) appear to favor the political-military interaction network in many instances.

The model advanced here asserts that *all* hunter-gatherer world-systems, including those associated with both mobile and sedentary hunter-gatherers, can be modeled as overlapping networks of interaction, with the effects of that interaction generally decreasing with distance. (See Figure 3.) Primary alliances, the most exchange, and the greatest degree of conflict will normally exist

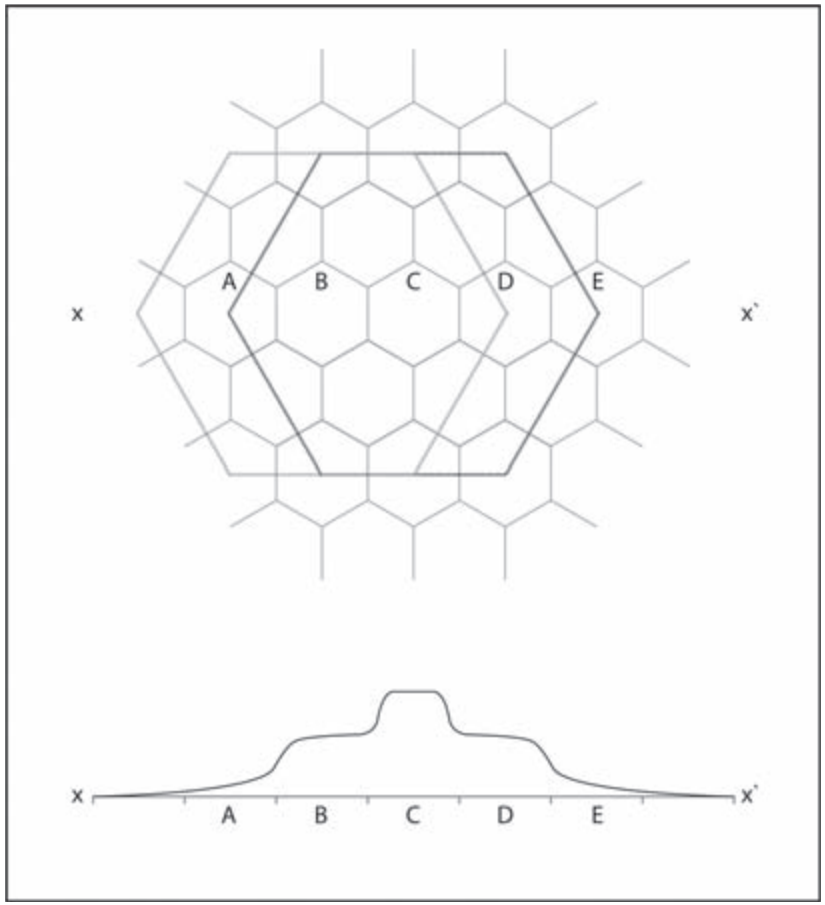

FIGURE 3. Schematic representation of overlapping hunter-gatherer world-systems. *Top*: Each hexagon represents the territory of one regional group. Area enclosed within dark dotted line represents the limit of group C's world-system; area enclosed within light dotted line represents the limit of group B's world-system. *Bottom*: Intensity of interaction along transect x-x`. Height of line represents intensity of interaction for members of group C, with most intense interaction occurring within group C's territory, an intermediate level with directly adjacent groups, and decreasing interaction with more distant groups. Note that this is a simplified model; the nature of actual hunter-gatherer groups will vary according to a vast array of factors. (Illustration by Matthew Walls based on original in Friesen 1995.)

between neighboring regional groups. The exact nature of the interaction will vary and may be manifested in the exchange of bulk goods, exchange of prestige goods, presence of regular conflict, exchange of information, exchange of marriage partners, or other phenomena. As such, all indications of interaction in the archaeological record can potentially be used to interpret world-systems, and each instance must be defined on the basis of locally important types of interaction. However, the key to such interpretation is an assessment of the degree to which the interaction is "important for the reproduction of the internal structures of the composite units" (Chase-Dunn and Hall 1993:855), which is the basis of the world-system definition used here.

This model of hunter-gatherer world-systems is a general one, intended to provide a basic framework for the study of interregional interaction. However, just as there is a significant degree of variation among hunter-gatherer regional groups, some degree of variation is expected to exist among the world-systems that link them. This variation can be described and analyzed in terms of three major dimensions: breadth, depth, and internal differentiation.

Breadth

World-system breadth refers to the geographic extent of the world-system, or the number of regional groups that interact to a significant degree with the regional group in question (cf. Hopkins and Wallerstein 1982). Is a given regional group connected only to its immediate neighbors, or does it interact to a significant degree with more geographically distant regional groups? Ethnographic evidence points to a range of "breadths" for hunter-gatherer groups—from a low level, as represented by many Inuit groups of the central Canadian Arctic, who interacted only with their immediate neighbors (Balikci 1984:416), to a relatively high level, as represented by many societies on the Northwest Coast of North America, such as the Haida (Blackman 1990) and Kwakiutl (Codere 1990), who engaged in direct exchange and warfare with relatively distant regional groups.

Depth

World-system depth refers to the range of types of interaction between regional groups, as well as their relative importance (cf. Hopkins and Wallerstein 1982). Depth can be expected to range between a low level, represented by occasional visiting, to a high level, in which regular contact occurs involving intermarriage; formal alliance systems; conflict; and exchange of information, preciosities, and bulk goods. An example of a relatively high level of world-system depth is provided by protocontact North Alaskan Iñupiat inter-

societal systems, within which utilitarian indigenous products such as caribou skins and sea mammal oil were exchanged on a relatively large scale, and in which diverse alliance systems and relatively large-scale warfare occurred (Burch 1980, 1988, 2005, 2006; Spencer 1959). Because depth refers to the importance of interaction to each component regional group, it can also be inferred from the extent to which a regional group alters its behavior in order to facilitate interaction, as when special trips are made for purposes of exchange or warfare.

Internal Differentiation

Many ethnographically documented hunter-gatherers exist in regional groups that have roughly the same social organization, technological capabilities, and access to resources as their neighbors. However, others display at least an incipient degree of internal differentiation, in that certain regional groups are more populous, sedentary, socially complex, or "affluent" than others. Within the world-system perspective, these latter groups can be characterized in terms of core-periphery relations.[1] The core-periphery relationship has proven to be a particularly robust, and often archaeologically visible, structural aspect of world-system theory as applied to more complex precapitalist societies (e.g., Champion 1989; Chase-Dunn and Hall 1991b; Rowlands et al. 1987). For purposes of researching precapitalist world-systems, Chase-Dunn and Hall (1991a:19) divided core-periphery relationships into two categories. Core-periphery *differentiation* refers to interacting societies at different levels of complexity and population density. Core-periphery *hierarchy* refers to some form of political, economic, or ideological domination between societies. Internal differentiation within hunter-gatherer world-systems can be characterized both in *degree*, as measured by the scale of difference between the core and the periphery, and in *form*, which indicates the location of the core relative to the periphery. It is important to note, though, that it is not reasonable to expect significant levels of core-periphery hierarchy in most cases of hunter-gatherer interaction.

Variability in Hunter-Gatherer World-Systems

Having proposed that networks of hunter-gatherer societies can be conceived of as world-systems, the next step is to describe the factors that influence the variability among them. The model already outlined in this chapter is intended as a framework for the synchronic description and interpretation of hunter-gatherer world-systems. The goal of the present section is to isolate

some of the factors that constrain the nature of hunter-gatherer world-systems and that can be used to understand *change* in them over time. This discussion is predicated on the assumption that the ethnographic record is not able to provide a complete, well-rounded understanding of hunter-gatherer interaction because of a wide range of biasing and limiting factors (Wobst 1978).

All aspects of society, from settlement pattern and technology to ideology and social structure, influence and are influenced by intersocietal interaction (see papers in Cusick 1998b). However, the following discussion gives primacy to a limited array of economic factors, for two main reasons. First, because world-system theory *as a whole* is based largely on economic concerns that include spatial distributions of resources, trade in bulk goods, and prestige goods exchange, there is a natural fit with these facets of economic activities in hunter-gatherer contexts. When dealing with hunter-gatherers (as is also true for any other societal category), there is no doubt that the subsistence economy, which is tightly intertwined with the distribution of exploited subsistence resources, constrains (but does not determine) phenomena such as population density, population distribution, and degree of sedentism, all of which in turn influence trade and other aspects of social structure. Likewise, the availability of, and demand for, preciosities is important in many hunter-gatherer contexts. It is essential to emphasize, however, that these factors are not expected to explain *everything*; rather, they are simply expected to be influential in shaping the nature of world-systems.

The second reason to emphasize economic factors in the context of archaeology is a practical one: Economic activities—as represented by subsistence, many aspects of technology, and acquisition of preciosities—are relatively amenable to observation and interpretation in the archaeological record. This does not mean that other phenomena are impossible to observe archaeologically; however, they are often more difficult to approach.

Although economic concerns are emphasized in the following discussion, it should be clear that they are connected to other factors, and in particular to social ones. It must be remembered that to the degree that human societies function as systems, interaction-induced change in any subsystem has the potential to alter other subsystems within the same society (Wells 1980b:1). For example, disease-induced demographic change can affect sociopolitical organization or settlement patterns (Dobyns 1983).

Distribution of Exploited Subsistence Resources

Hunter-gatherer interaction is tightly constrained by the distribution of subsistence resources (e.g., Dyson-Hudson and Smith 1978; Wobst 1976; Yellen and Harpending 1972). Initially, therefore, ecological and geographic factors

must be considered as major constraints on hunter-gatherer world-systems. This inference is not unique to hunter-gatherer societies. Intersocietal interaction within the capitalist world-economy is also constrained by such factors, as illustrated by the rise of some Near Eastern nations to semiperipheral status because of wealth derived from large oil reserves (Shannon 1996), and by the role of geography in the rise of England as a hegemonic power of the nineteenth-century world-economy (Schneider 1977). However, hunter-gatherers can be expected to have their interactions even more closely regulated by local environmental conditions. The importance of environmental factors to interaction between hunter-gatherer societies is reflected in a number of previous studies. For example, many researchers conclude that a major goal of hunter-gatherer interaction is to maintain networks in order to mitigate periodic environmental fluctuations (e.g., Burch 1980; Whallon 2006; Wiessner 1982). In addition, regional variability in resource availability has been hypothesized to lead to regional exchange networks (e.g., Hickey 1976).

A resource cannot be considered exploited simply because of its presence in a region. Rather, it is considered here to be a *potential* subsistence resource unless a given regional group possesses the technology, social organization, and worldview that allow it to be obtained in a predictable manner. This inference is well illustrated by Sheehan's (1985) study of the development of bowhead whale hunting in northwestern Alaska. In the ethnohistoric literature, bowhead whales constituted the most important resource for a number of coastal Alaskan Iñupiaq regional groups. However, these whales were not exploited during earlier periods, probably because drag float technology and a social organization based around the institution of the *umialik* (whaling captain) had not yet been introduced. One category of technology that is critical to many forms of resource acquisition as well as to various forms of interaction is transport technology, which can have an impact on speeds and distances covered and on the practicality of transporting large amounts of food or equipment (Ames 2002; Arnold 1995).

Figure 4 presents a general framework for understanding the potential effects of the distribution of exploited subsistence resources on intersocietal interaction. Distribution of exploited subsistence resources can be considered to vary along two primary axes: overall density and spatiotemporal variability. The overall density of exploited resources will have a direct effect on the nature of hunter-gatherer interaction, through several interrelated processes. If exploited resources are relatively scarce, populations are expected to be low in density and high in mobility, traversing large areas to provision themselves and coming into contact only with their immediate neighbors. Interaction is, therefore, predicted to exist at a low level because of a lack of opportunity and

		Resource Density	
		Scarce	Abundant
Geographic and Temporal Distribution of Resources	Even	Least Interaction	Intermediate Interaction
	Clumped	Intermediate Interaction	Most Interaction

FIGURE 4. Relative importance of intersocietal interaction under different conditions of exploited resource density and distribution. (Illustration by author.)

because of the high costs of travel over relatively great distances. Of course, some degree of interaction will still be maintained, primarily to provide a safety net in case of resource failure, and to provide access to marriage partners (Wobst 1974).

On the other hand, in cases with relatively densely packed subsistence resources, population densities will be higher, all else being equal, and this will lead to an increased frequency of interaction due to the proximity of more groups (e.g., Mellars 1985). In addition, increased population densities are associated with reduced mobility, more social circumscription, and a greater degree of sedentism (Price and Brown 1985). Greater population density and degree of sedentism are linked to increased "social complexity" (Rowley-Conwy 2001), which can arise as a response to the heavier information loads and decreased opportunity for group fission that occur in densely populated, sedentary, and circumscribed groups (Johnson 1982). In some cases, increased social complexity can in turn lead to other forms of interaction, as individuals or interest groups attempt to reinforce and symbolize status hierarchies through trade in prestige goods (discussed further in the following section).

Spatial and temporal variability of subsistence resources is also an important factor in constraining patterns of interaction among hunter-gatherers. If exploited resources are evenly distributed in time and space, there is no direct economic reason for exchange or other forms of interaction, because all groups have access to the same items at the same time. In addition, there is little potential for internal differentiation among regional groups, as expressed in population densities, degree of sedentism, or complexity of social organization. However, if exploited resources are unevenly distributed, there may be a greater reason for exchange to even out temporal or spatial differences (e.g.,

Cannon 1995; Hickey 1976; Santley and Pool 1993; Yellen and Harpending 1972), and there is also an increased likelihood of conflict over resources (Cannon 1992). In addition, some degree of internal differentiation may exist because uneven resource distributions can concentrate resources in one or several delimited areas, which could assume a more complex status because of greater population density and the need to control those resources (Dyson-Hudson and Smith 1978; cf. Flannery 1972).

Given that the distribution of exploited subsistence resources is considered a primary factor in constraining patterns of hunter-gatherer interaction, significant change in this distribution is hypothesized to be a primary cause of change in hunter-gatherer world-systems. Such change can result from factors either external or internal to the world-system. External factors that can affect resource distributions include environmental change (e.g., Steward 1955). An example of ecosystem change that can affect the distribution of potential subsistence resources is the changing patterns of sea ice in the central Canadian Arctic during the Little Ice Age beginning around 1400 AD. Increased sea ice is hypothesized to have led to a more restricted summer distribution of bowhead whales, which in turn influenced precontact Thule Inuit hunting patterns (McCartney and Savelle 1993; Savelle 1987; Savelle and McCartney 1988). Exploited subsistence resources can also be obtained through trade, and their availability can therefore be affected through changes in volume or category of available bulk goods, as when agriculturalists reside near hunter-gatherers (e.g., Headland and Reid 1989; Solway and Lee 1990; Spielmann 1991; Zvelebil 2006).

Internal factors that can affect exploited resource distributions include changing technology or changing social organization *within* a regional society, which allow access to previously unutilized or underutilized resources (e.g., Sheehan 1985). For example, salmon use on the Northwest Coast of North America was limited in scale until efficient harvesting and storage technology and concomitant social organization were developed, transforming salmon into an exploited subsistence resource (Ames 2003; Ames and Maschner 1999; Cannon 1998; Matson and Coupland 1995). Of course, the development or adoption of new technologies is in turn expected to be largely dependent on the distribution of potential subsistence resources.

In Figure 4, changes in the distribution of exploited resources are predicted to affect world-systems along these two axes. As the density of exploited subsistence resources increases for any reason, population densities may also increase, leading to more intensive and frequent interaction. In terms of the world-system, this should yield an increase primarily in breadth and secondarily in depth because of greater proximity of regional groups. Changes in the spatial

and temporal variability of exploited subsistence resources are also expected to affect interaction. As resources become more variable, the impetus for interregional trade or conflict will grow, leading to increased depth and breadth. Additionally, as spatial and temporal variability rise, internal differentiation has the potential to emerge or to increase in degree, because specific regional groups may have privileged access to resources that are more densely distributed or dependable. In sum, as resources become more densely distributed, and also more variable in time and space, hunter-gatherer world-systems are predicted to grow in depth and breadth and, in certain cases, in degree of internal differentiation.

Availability of Preciosities

A number of authors have identified trade in preciosities as having important effects on the nature of world-systems whose component societies range in complexity from chiefdoms (Peregrine 1992) to states (Schneider 1977). In those contexts, preciosities often function as prestige goods and are used to reinforce elite status within hierarchically organized societies that form components of world-systems (cf. Earle 1994, 1997; Peregrine 1992). It is hypothesized here that changes in demand for preciosities can also affect hunter-gatherer world-systems in predictable ways. However, all preciosities are not necessarily "prestige goods," in that some may be traded and used either to symbolize alliances or partnerships (e.g., Carlsson 2003; Wiessner 1982) or for utilitarian purposes (e.g., Schneider 1977) rather than to accrue power or prestige.

Demand for preciosities can change because of both internal and external factors. A key internal factor that can increase demand for preciosities is the development of social hierarchies, which are often reinforced and symbolized by differential access to exotic goods (e.g., Ekholm 1972; Friedman and Rowlands 1977; Peregrine 1992). Although the development of social hierarchies is a complex process, it is closely related to population density and degree of sedentism and therefore to the distribution of exploited subsistence resources, as discussed previously. In instances of high population densities, increased information loads lead to "scalar stress," which is often reduced through the institution of social hierarchies (Cohen 1985; Johnson 1982). In these cases, preciosities, which may previously have been exchanged at low levels to symbolize and expedite alliance systems between regional groups, can become more important (e.g., Arnold 1992; Soffer 1985). In most hunter-gatherer societies, the value of such goods is culturally constructed, in that the goods are not necessarily "functionally superior" and they are often assigned value because they are imported and therefore, by definition, rare.

An external factor that can lead to a higher demand for preciosities is their increased availability. Within many hunter-gatherer world-systems, trade remains at low levels because neighboring regional groups do not have access to a broad range of materials or technologies that are markedly superior to locally available items. Therefore, the primary function of trade in preciosities is to cement alliances or to symbolize social differentiation. However, if previously unavailable goods that are perceived as valuable because of technological superiority or any other factor are introduced, then hunter-gatherers may actively attempt to acquire them. More specifically, if the perceived value of an import outweighs its costs, which might be measured in terms of the effort required to transport the items and to obtain items that are exchanged for the imports, then the item will likely be imported. Numerous cases exist in which hunter-gatherer groups have altered their subsistence-settlement systems in order to acquire goods that they deem superior, as in the many instances of trade between hunter-gatherers and neighboring agricultural societies (e.g., Headland and Reid 1989).

Increased demand for externally derived items due to any of these reasons is predicted to increase the breadth and depth of the world-system, as regional groups boost their efforts to obtain these items. It can also lead to increased internal differentiation, if core groups can acquire a disproportionate amount of an increased flow of preciosities. However, according to the present model, an increased flow of preciosities should intensify the *degree* of internal differentiation, but not the *location* of the core, which should continue to be closely related to the distribution of exploited subsistence resources. An exception to this expectation would occur if an imported technology is useful in the pursuit of subsistence resources, in which case its increased acquisition by specific regional groups may allow them to become core societies.

Archaeological Correlates of Hunter-Gatherer World-Systems

The nature of hunter-gatherer world-systems can be inferred from multiple sources, including the ethnographic and ethnohistoric records (Chase-Dunn and Mann 1998). However, my primary goal here is to contribute to their understanding in archaeological contexts. Only archaeological data are potentially available for all periods and will, therefore, be emphasized where possible in this book. Following is an outline of the categories of archaeological data that can be used to infer world-system breadth, depth, and internal differentiation,

although not all categories of information will be applicable, or indeed available, for every case study. I will begin with a brief consideration of boundaries.

Boundaries: Regional Groups and World-Systems

The study of world-systems is inherently spatial. Although interpretation must range over multiple scales, two are particularly important. At one level the basic interacting units are hunter-gatherer *regional groups*, whereas at a much broader level these regional groups are linked in networks that form *world-systems*. Thus, to address world-systems in the archaeological record, ideally one would want to be able to define precisely the boundaries of both regional groups and world-systems. However, in most archaeological (as opposed to ethnographic) instances, reconstruction of such boundaries is difficult, if not impossible. Following is a brief consideration of these two scales.

The difficulty in defining regional groups through archaeological data is best illustrated by an ethnographic case. As will be discussed further in Chapter 5, the North Alaskan Iñupiat were organized into tightly bounded and actively defended regional territories, with occupants self-identifying as belonging to their named regional group (Burch 2005, 2006). Only a few material markers partially conveyed territorial membership: most notably parka patterns, facial tattoos, and kayak paddles. However, none of these categories is encountered in the archaeological record in anything approaching the numbers that would be required to associate particular patterns with particular regional groups. Instead, a vast majority of material culture is shared *across* boundaries and thus cannot be used to define regional group territories, even though it is indicative of some level of interaction (Walthall and Koldehoff 1998).

In the absence of material-culture markers, a second possible means of reconstructing regional territories is through interpretation of the distribution of known sites, especially longer-term residential sites. For example, in areas where high-resolution regional survey has occurred, uninhabited "gaps" in settlement might be interpreted as likely boundaries between regional groups, and territories might be centered on particularly large sites or site clusters, as they were in several Northwest Alaskan ethnographic cases (Burch 2006). However, the problems with this procedure are numerous. For example, in the Alaskan ethnographic record, the largest winter villages in a given territory were not the only winter villages; rather, within most territories a number of winter villages were occupied. So, how would one know, archaeologically, which "satellite" villages are in the same regional group as a particular principal village, other than by taking an educated guess based on proximity? One would also need to make assumptions about contemporaneity of sites, and that relative

site size reflects the relative size of the original population (as opposed to larger sites having been occupied longer, with sequential building of small numbers of houses).

Other data sources can also be useful in defining regional group territories in optimal circumstances. For example, lithic raw-material distributions have been used to reconstruct territories among early hunter-gatherers in several regions of North America (e.g., Burke 2006; Dillian 2003; Jones et al. 2003). Even rock art can, in certain circumstances, reflect group territories, as when a boundary between Australian Aboriginal clan lands was marked by a blank area in a major rock art site, with separate clan-related styles on each side of the gap (Taçon 1994; see also Carden 2008; David and Cole 1990; David and Lourandos 1998). However, as a general rule it will be only rarely possible to define past regional group territories and boundaries on the basis of material culture, raw-material distribution, site distributions, and other phenomena in the absence of corroborating ethnographic data. Therefore, in the context of world-systems analysis, it will usually be necessary to *assume* that regional groups exist in the hunter-gatherer archaeological record, without actually defining their precise territories.

Given that regional group boundaries will be difficult to reconstruct archaeologically, what of the boundaries of the larger-scale world-systems of which they are a part? To reiterate the earlier discussion, when dealing with premodern world-systems, the definition of world-system boundaries is elusive. Wallerstein's (1974:20) original formulation defined boundaries and interaction in economic terms and in particular stressed exchange in essential bulk goods as a critical variable in the definition of world-systems. Since that time, arguments have been made for establishing world-system boundaries on the basis of exchange in luxury or prestige goods (Peregrine 1991; Schneider 1977), degree of political interaction (Tilly 1984), and degree of conflict or warfare (Wilkinson 1987, 1991). Chase-Dunn and Hall (1991a, 1993) have reviewed this issue and advocated an eclectic approach to world-system boundaries, suggesting a redefinition of world-systems as "intersocietal networks in which the interactions (e.g., exchange, warfare, intermarriage) are important for the reproduction of the internal structures of the composite units and importantly affect changes that occur in these local structures" (Chase-Dunn and Hall 1993:855). This definition, which is consistent with the approach adopted here, requires that each case be assessed on its own merits in order to determine which types of interaction are necessary for maintenance of its internal social structures. For example, if exchange in status goods is required to maintain social structures within a society, then that exchange can be used in determining the boundaries of that world-system. Thus, hunter-gatherer world-systems

usually will not have sharp spatial boundaries in the absence of major geographic features such as bodies of water. World-systems will, however, have an extent that can be approximated on the basis of evidence for various forms of interaction, as outlined in the following discussion of world-system breadth and depth.

Breadth

World-system breadth is potentially the most difficult aspect of hunter-gatherer world-systems to infer on the basis of archaeological data, because many interactions will leave no archaeological trace. Furthermore, exchange of individual items over great distances does not necessarily mean that the producing group and the recipient group have direct knowledge of each other or are connected to one another in a significant way. However, breadth might generally be inferred through at least four classes of data. First, and despite the previous caveat, the presence of trade goods originating in different regions can be used to infer the existence of interaction with other regional groups. Second, the occurrence of aggregation sites that can be demonstrated to have been occupied by members of a number of different regional groups constitutes direct evidence of such interaction (Conkey 1980; H. Jackson 1991). Although such sites are known from the ethnohistoric record of northern Alaska (Burch 1988), these Alaskan examples were generally located in environments that are not amenable to archaeological preservation, such as on active ocean beaches. Third, data derived from human skeletal remains might, where available, be used to infer the occurrence of interaction between regions. For example, analysis of skull shape of different populations can indicate the degree of genetic intermixing between populations (e.g., Ubelaker 1978:89); stable isotopes can indicate regions traveled over, or moved from, during individuals' lives (e.g., Beard and Johnson 2000; Haverkort et al. 2010); and analyses of ancient DNA can indicate relationships of individuals with other populations, including both hunter-gatherers and agriculturalists (e.g., de Filippo et al. 2010; Hayes et al. 2005).

Fourth, the presence and relative permeability of group boundaries can potentially be used to infer world-system breadth. Such boundaries can be geographic or cultural in nature. Geographic barriers, which range from impenetrable features such as mountain ranges and oceans to ecologically unproductive zones that imply a reduced opportunity for interaction (e.g., Yesner 1985), may be interpreted in a relatively straightforward fashion by archaeologists. Cultural boundaries, on the other hand, can be much more difficult to infer on the basis of material culture. As an example, throughout most of northern North America a distinct cultural discontinuity existed between

Inuit and Subarctic Dene hunter-gatherer groups, as represented by differences in language, ideology, and material culture. However, the frequency and nature of interaction across this discontinuity, and therefore the presence or absence of a world-system boundary, varied from avoidance (indicating a meaningful world-system boundary) to relatively extensive trade and warfare (e.g., Burch and Correll 1972; Krech 1979). In this and other cases, the degree of similarity in artifact style does not uniformly reflect the degree of interaction between two groups. Rather, the relationship of style to group boundaries is mediated by many factors, including population density (Wobst 1976), resource predictability (Gamble 1986; Yellen and Harpending 1972), and the fact that material culture does not always convey social messages in a direct fashion (e.g., Hodder 1982; Wiessner 1983). Therefore, artifact style cannot be considered to vary directly with the degree of interaction or boundedness. However, in specific cases, an increase in stylistic similarities between regional groups over time might be interpreted cautiously as evidence of decreased boundedness, and vice versa.

Depth

World-system depth may be indicated by many processes, including intermarriage, conflict, and exchange of information or material goods. Not all, however, are equally visible in the archaeological record. For example, intermarriage may be visible only if a long-term record of human skeletal remains is available for the study of changing genetic traits. Information exchange is also difficult to observe directly, although it can be inferred on the basis of (1) diffusion of artifact types and styles, and (2) the presence of material exchange, which implies the opportunity to exchange information (e.g., Mulvaney 1976; Wiessner 1982). It is relatively common for artifact styles or other material-culture traits to be shared over enormous areas, as in the case of Eurasian Upper Paleolithic "Venus figurines" (Gamble 1982; Leroi-Gourhan 1968). However, in the context of world-systems analysis this should not be taken to indicate that all regional groups with similar styles are necessarily interacting with each other in important ways; rather, they are all parts of overlapping regional networks that see interaction between neighboring groups, and ideas can move great distances despite a lack of direct knowledge of or interaction among many of the distantly connected groups (Jefferies 1997).

The ethnographic record contains many accounts of small-scale societies engaging in conflict or extensive warfare (e.g., Lambert 2002; Maschner and Reedy-Maschner 1998; Tolan-Smith 2003; Turney-High 1949). However, many of these actions do not have simple and direct archaeological correlates. For example, hunter-gatherers do not tend to build defensive structures, although

a few exceptions exist, such as palisades and ditches built by Northwest Coast peoples (Ames 1994; Hayden et al. 1985). Normal hunting gear, rather than special equipment, was usually used for battle (Burch 1974:5), thus reducing the visibility of conflict in the archaeological record. A few categories of special gear may occasionally have been used, such as Alaskan slat armor (Ackerman 1984; Burch 1988; Spencer 1984), and Inuvialuit bone daggers (LeMoine 1991). Importantly, conflict among hunter-gatherers does not occur only for purposes of revenge and blood-feuding. It may also serve many other purposes, including economic ones, as when marginal groups of the Fraser River region regularly raided neighboring groups with better access to salmon resources (Cannon 1992; Schaepe 2006). Furthermore, conflict may be inversely related to other forms of interaction in that conflict may be reduced in order to facilitate activities such as trade (Burch 2005).

Exchange is usually the most archaeologically visible form of interaction. In many hunter-gatherer societies, exchange occurs not so much for acquisition of specific material goods as for the sake of maintaining the intersocietal relationships, such as alliances, that are symbolized by that exchange (e.g., Burch and Correll 1972; Dalton 1977; Gamble 1993; Jochim 2006; Wiessner 1982). In terms of material-culture patterning, this suggests that exchange will take place on a small scale and should involve relatively small and portable items that may travel "down the line" for great distances, well beyond the region that is directly known to the society in which they originated (e.g., Gamble 1986:338). These items can take almost any form, from exotic preciosities used in status display to utilitarian goods. In some cases the items may be nonmaterial, as in the case of songs and dances exchanged between Australian regional groups (Flood 1983). In other cases, material goods may be exchanged despite a lack of a clear utilitarian reason, as in the Australian case cited by Gould (1980) in which lithic raw materials of poor quality were imported to areas that contained better-quality lithic materials. The abundance of artifacts exchanged in these down-the-line patterns as part of chains of reciprocal exchanges can be expected to decrease in a regular manner with distance from their region of origin (Renfrew 1975, 1977). Such distributions have been formalized using a gravity model, which predicts that degree of interaction, and therefore quantity of exchanged materials, varies directly with the size of the population of two groups and inversely with the distance between them (Crumley 1979; Hodder and Orton 1976; Plog 1976).

When defining the depth of a hunter-gatherer world-system, the simple presence of exchange is less important than the number and variety of exchanged items. All else being equal, larger volumes of exchanged items should indicate a greater degree of interaction, and the variety of exchanged items can

indicate both the purpose of the exchange and its importance to each regional group. Both of these factors are crucial in attempting to reconstruct a world-system. For example, exchanged preciosities are often used for social or political purposes, such as the reinforcement of social hierarchies (e.g., Hayden and Schulting 1997; Peregrine 1992). In many hunter-gatherer societies, a general absence of exchange in bulk goods is likely due, at least in part, to lack of appropriate transportation technology to move items over large, sparsely populated areas (Perlman 1985:33). A practical difficulty results from the fact that bulk goods, such as animal and vegetable foods and skins, tend to preserve more poorly in the archaeological record than prestige goods such as exotic lithic materials and metals.

Finally, because depth refers to the importance of the interaction to a given regional group, indications of this importance that do not fit neatly into other categories of interaction must be considered. In particular, the degree to which intersocietal interaction affects subsistence-settlement patterns can indicate its overall significance. For example, settlement patterns might incorporate a degree of increased mobility at least for some members during certain seasons, intended to bring people into direct contact with members of other regional groups. Alternatively, the importance of interaction can be indicated by the expenditure of significant efforts to acquire goods for export, as when settlement patterns in northern North America were altered to allow better access to furs (Francis and Morantz 1983).

Internal Differentiation

As mentioned previously, internal differentiation can be divided into core-periphery differentiation, which refers to interacting societies at different levels of complexity and population density, and core-periphery hierarchy, which refers to some form of political, economic, or ideological domination between societies (Chase-Dunn and Hall 1991a:19).

For small-scale societies, core-periphery hierarchy is more difficult to infer from the archaeological record than is core-periphery differentiation. However, several classes of data can be used to infer domination, although such inferences must be assessed with care. First, core-periphery hierarchy may be observable in the archaeological record as territorial expansion of one regional group at the expense of another (Chase-Dunn et al. 1992). Second, if a core-periphery hierarchy exists, a concentration of prestige goods at core sites might occur, indicating unequal exchange relations. Third, if systematic domination occurs, the core society must be capable of some degree of coercion or raiding. Therefore, the presence of some archaeological correlates of regular conflict, as summarized herein, would indicate the presence of one precondition for the presence of a hierarchy.

Core-periphery differentiation, on the other hand, may be more readily observed in the archaeological record. Although one of the major criteria, population density, cannot be directly measured, it can be approached through a number of techniques that take into account the size and duration of occupation of sites (e.g., Whitelaw 1991; Yellen 1977), as well as the relative carrying capacity of local environments. Although carrying capacity is itself a complex concept that cannot be defined precisely (Zubrow 1975), it is included here because in certain circumstances it may be reconstructed archaeologically and, in conjunction with other criteria, used to interpret demographic patterns. In undifferentiated world-systems, population densities will be similar between regional groups because of comparable densities of exploited resources in their respective territories. In differentiated world-systems, on the other hand, population sizes will vary, with core groups more densely populated, and often more sedentary, than peripheral ones.

The other major criterion for inferring core-periphery differentiation is the presence of greater social or cultural complexity in the core society. For present purposes, Price and Brown's (1985:7) relatively broad definition of complexity among hunter-gatherers as "that which is composed of many interrelated parts" will be used. This should be recognizable in factors such as (1) status differentiation, as manifested in burial patterns or intrasite spatial patterning in architecture or artifacts; (2) construction of special structures intended to house social activities; and (3) indications of elaborate social practices in the form of material culture designed for "display." In undifferentiated hunter-gatherer world-systems, social organization within individual regional groups will be equivalent; in differentiated world-systems, social organization will be more complex in core groups, which will display a greater degree of formal leadership, social hierarchies, and other related phenomena.

Summary

This chapter has drawn together information from several sources, primary among them world-system theory and hunter-gatherer studies, to begin to build a model of how hunter-gatherer world-systems (networks of interregional interaction) are organized. In particular, efforts were made to understand how hunter-gatherer world-systems can be expected to vary in predictable ways in relation to the distribution of exploited subsistence resources, and, to a lesser degree, the availability of and desire for preciosities. This discussion is intentionally reductionist; these are factors that can be *generalized* and linked

to broader discussions of world-system theory and that are expected to be at least partially visible in archaeological contexts. It is important to note that an array of additional factors, many of them relating to particular historical trajectories of individual cases, will also influence interaction, as will be evident throughout this book. Thus, the model proposed here is intended as a general framework that can be used to understand particular cases of interaction, all else being equal.

To summarize, all hunter-gatherers interact with neighbors in networks of regional groups that can be considered world-systems. Because these world-systems tend not to have precise boundaries, but rather overlap significantly with each other, they are best analyzed from the point of view of a single, particular regional group. In essence, all categories of interaction in which that group engages, if they are important to the group's social reproduction, and all regional groups interacted with form the world-system of that particular hunter-gatherer group. Hunter-gatherer world-system variability can be characterized in terms of *breadth* (the overall spatial extent of the world-system and the number of interacting regional groups involved), *depth* (the importance of the interaction to the regional group and the number of categories of interaction that are engaged in), and *internal differentiation* (the degree to which regional groups within the world-system differ in phenomena such as population, material wealth, and social hierarchies).

One of the most important, and archaeologically visible, factors affecting world-systems is the distribution of exploited subsistence resources. This can alter because of environmental factors, changing availability of bulk trade goods, technological developments, or social factors that relate to resource acquisition. Such changes will in turn influence patterns of interaction among hunter-gatherers through several processes. As subsistence resources become more abundant, a greater population density and degree of sedentism are possible, leading to increasing proximity of regional groups and the potential for greater social complexity within regional groups. Increasing proximity leads to more opportunity for interaction, and increasing social complexity often leads to higher demand for trade in prestige goods (among other things). These mechanisms are predicted to lead to increasing world-system breadth and depth. As exploited subsistence resources become more spatially or temporally variable, rising interregional differences in *types* of resource are predicted to lead to further exchange and alliance, thus increasing world-system depth and breadth. On the other hand, increasing interregional variability in resource *densities* can result in privileged access to important resources by specific regional groups, leading to the initiation or increase in degree of internal differentiation.

If the *location* of exploited subsistence resources changes—that is, if new areas yield increased densities of resources—then the location of "cores" may shift to the regional group or groups inhabiting these new areas.

A secondary economic factor that is expected to affect hunter-gatherer world-systems is the demand for preciosities. Such demand can shift because of internal factors, such as social change leading to increased hierarchies, or external factors, such as changes in the availability of preciosities. As availability or demand rises, world-system breadth and depth are similarly expected to increase (and vice versa). In addition, in certain cases, the *degree* of internal differentiation may increase if core groups can obtain and control a disproportionate share of the exchanged preciosities. However, the *location* of core societies is unlikely to change, as they are likely to remain dependent on the distribution of exploited subsistence resources. An exception to this expectation will occur if the import of certain categories of material culture gives specific regional groups a technological advantage in pursuit of subsistence resources.

Finally, this chapter considered major categories of archaeological data that can be used to interpret the nature of past hunter-gatherer world-systems. Although precise boundaries of regional groups and world-systems are difficult to reconstruct, one can approximate the nature of a world-system based on a range of categories of evidence for interaction operating at any particular site or region. As such, significant change in evidence for interaction may indicate change in the nature of the world-system, as evident in world-system breadth, depth, and internal differentiation. Archaeological correlates of major categories of world-system change are summarized in the lists that follow. In each instance, the opposite of the observed relationship is also expected. Taking the first point as an example, if increased breadth should be indicated by the presence of trade goods originating in a greater number of regions, then decreased breadth should be indicated by the presence of trade goods originating in a lower number of regions.

Increased breadth:

a. The presence of trade goods originating in a greater number of regions
b. Initiation or increasing occurrence of aggregation sites that can be demonstrated to have been occupied by members of more than one regional group
c. Physical anthropological data indicating increased gene flow between regional groups or movement of individuals over long distances
d. Decreasing boundary maintenance as evident in stylistic cultural markers

Increased depth:

a. Increased total volume of trade goods
b. Trade goods occurring in a greater number of functional categories
c. Increased frequency of trade in bulk goods relative to preciosities
d. Altered settlement patterns, with interaction becoming an important rationale for new patterns of seasonal mobility and settlement
e. Altered patterns of resource acquisition, with increased efforts made to acquire resources to be exchanged
f. Decreased evidence for interregional conflict

Increased degree of internal differentiation:

a. Increase in core area population density relative to that in peripheral areas
b. Increased carrying capacity, as measured in the density of exploited subsistence resources, for core areas relative to peripheral areas
c. Increased proportion of preciosities in core areas relative to peripheral areas
d. Increased degree of social complexity in core areas relative to peripheral areas, as seen in:
    i. More complex social aspects of intrasite patterning; for example, variability in house form
    ii. More complex differentiation in burial patterning
    iii. More frequent display of prestigious or exotic goods

Changing form of internal differentiation:

a. New core areas appear, as indicated by correlates mentioned above

These generalizations can now be used to guide the interpretation of past world-systems. The case study developed in subsequent chapters should begin to clarify whether hunter-gatherer world-systems do in fact function in predictable ways according to the major factors outlined above, particularly distribution of exploited resources and availability of preciosities. At the same time, it is important to recognize that many other processes will also affect past interaction networks and are likely to complicate interpretations.

4

Background to the Case Study

ARCHAEOLOGY AND ETHNOHISTORY OF THE MACKENZIE DELTA REGION

THE REMAINDER OF THIS BOOK revolves around the application of world-system theory to the Inuvialuit culture history of Herschel Island and the Mackenzie Delta region[1] from approximately 1500 to 1910 AD. The research has two primary goals: to understand the role of interaction in Inuvialuit cultural development during the last five hundred years, and to evaluate the working model of hunter-gatherer world-systems already presented in this book. The Mackenzie Delta region is appropriate for such an application, because previous archaeological and ethnohistoric research allows the initial reconstruction of major trends in Inuvialuit cultural development over time, which can be used to develop a set of expectations for the nature of the world-systems in which the Inuvialuit participated. This temporal span has been chosen because it represents the early and major stages of incorporation of the region into the European world-economy. As such, the period tells the story of the dynamic changes that gave rise to modern Inuvialuit society. In addition, the period of colonial interaction between the European world-economy and indigenous world-systems globally represents a unique opportunity to observe processes of culture change, because the intersection of radically different societies creates the potential for rapid and profound change in each component society. This continuously evolving relationship with the European world-economy core is expected to have affected indigenous peoples not only at the level of the regional group, local group, and household but also at the level of the world-system.

This chapter presents a brief history of research in the area, as well as a summary of the archaeology and ethnohistory of the greater Mackenzie Delta region, here defined as that region extending along the Beaufort Sea coast from approximately Cape Parry in the east to Kaktovik (Barter Island) in the west. (See Figures 5 and 6.) Where relevant, cultural-historical developments in

FIGURE 5. Map of the western North American Arctic, indicating sites mentioned in text. (Illustration by Matthew Walls based on original in Friesen 1995.)

FIGURE 6. Map of the Mackenzie Delta region, indicating sites mentioned in text. (Illustration by Matthew Walls based on original in Friesen 1995.)

Table 3. Summary of Culture History in the Mackenzie Delta Region, Presented as Stages of Incorporation into the World-Economy

Stage of Incorporation into the World-Economy	Dates	Frequently Used Cultural Terms
External zone	3000 BC–1200(?) AD	Palaeoeskimo
Autonomous zone	1200–1800 AD	Western Thule, Thule Inuit, precontact Mackenzie Inuit, precontact Inuvialuit
Contact periphery	1800–1889 AD	Protocontact Mackenzie Inuit, Siglit, protocontact Inuvialuit
Marginal periphery	1889–1907 AD	Early contact Mackenzie Inuit, Siglit, Kogmollik, early contact Inuvialuit
Dependent periphery	1907–? AD	Inuvialuit

Table by author.

adjacent regions will also be discussed. This summary is intended only to provide an initial overview that puts into context the archaeological data and interpretation that follow; more detailed archaeological and ethnohistoric information will be introduced in later chapters, where relevant, to assess the nature of changing Inuvialuit world-systems. The present discussion is organized into five stages of incorporation, ranging from the external zone to the dependent periphery. (See Table 3.)

History of Research in the Mackenzie Delta Region

Before proceeding to a history of research, it must be noted that the archaeological record in the region contains a number of gaps that are due in large part to the fact that the Mackenzie Delta and adjacent Beaufort Sea coast constitute an active erosional zone. Many areas of the coast are receding rapidly, mainly because of four factors: (1) Coastal sediments consist of easily eroded sands; (2) coastal sediments contain numerous ice lenses; (3) violent storms regularly raise the water level against eroding coastlines; and (4) the Mackenzie Delta region is submerging because of isostatic activity (de Krom and Pollard 1989; Lantuit and Pollard 2008; Mackay 1963:55). As a result many, perhaps a majority, of coastal archaeological sites have already disappeared (Arnold 1988). This situation is applicable to most of the adjacent Alaska North Slope as well (Barnes and Hopkins 1978; Hopkins and Hartz 1978). Interior sites, although present, tend to result from much more brief and

task-specific activities and therefore usually do not retain large samples of material culture and do not reflect the diversity of past activities that large coastal settlements do.

Aside from observations of abandoned archaeological sites by early explorers, the history of archaeology in the region begins with excavations by Stefansson and his associates in the Franklin Bay area (Morrison 1990a, 1991b; Stefansson 1919; Wissler 1919), Jenness at Barter Island (Jenness 1957, 1990, 1991), Pedersen at Atkinson Point (Mathiassen 1930), and Sorensen at Barter Island (Mathiassen 1930), all during the first half of the twentieth century. These early excavated collections were either never fully described or else were collected in a fashion that does not allow precise reconstruction of the provenience of individual artifacts. Although later surveys touched on Inuvialuit sites (MacNeish 1956a; Osborne 1952), the first intensive research was performed by McGhee (1974) on the East Channel of the Mackenzie River, culminating in his major report centered on the site of Kitigaaryuit (Kittigazuit).

Following McGhee's research, the 1970s saw little additional fieldwork, with the exception of Yorga's (1978, 1980) excavations at the precontact Washout site on Herschel Island. However, a virtual explosion of archaeological survey and excavation occurred beginning in the mid-1980s as a result of two separate but related ventures. First, the Prince of Wales Northern Heritage Centre sponsored the excavation of a number of sites, many of them threatened by erosion (Arnold 1988). Second, the Northern Oil and Gas Action Program (NOGAP) archaeology project, an archaeological resource management program coordinated by the Federal, Yukon, and Northwest Territories governments, resulted in extensive survey and excavation in the region (Cinq-Mars and Pilon 1991; Pilon 1994). These two organizations initiated excavations at Inuvialuit and earlier sites on the East Channel of the Mackenzie River (Arnold 1986b, 1988, 1994a; Arnold and Hanks 1991; Stromberg 1987; Sutherland 2006), in the Eskimo Lakes area (Arnold 1990; Morrison 1988; Morrison and Arnold 1994; Swayze 1994), in coastal regions east of the Mackenzie Delta (Le Blanc 1991, 1994a, 1994b; Morrison 1990a, 1997), and on the Yukon North Slope (Friesen 1994; Friesen and Hunston 1994; Nagy 1990, 1991).

In the 1990s, fieldwork continued, much of which was aimed at understanding the earliest Inuvialuit settlement in the region. On the East Channel of the Mackenzie River the earliest Thule Inuit site of Cache Point was excavated over three seasons (Friesen 2006, 2009a; Friesen and Betts 2006), and east of the Mackenzie Delta, Morrison (2000a, 2009) excavated at the Pearce Point and Tiktalik sites. On the Tuktoyaktuk Peninsula, Betts (2007) excavated at McKinley Bay, in a study designed to reveal how early Inuvialuit

hunted bowhead whales in the region. Additionally, a number of books and articles have appeared that synthesize the region's culture history, particularly during the last eight hundred years (Alunik et al. 2003; Betts 2008; Betts and Friesen 2004, 2006).

The ethnohistoric record for this region also contains some gaps, because relatively little was recorded before the epidemics and migrations of the late nineteenth and early twentieth centuries (McGhee 1974; D. Smith 1984). The first European to record a meeting with Inuvialuit was Franklin who, in 1826, traveled down the Mackenzie River and west along the Beaufort Sea Coast to Return Reef, just east of the Colville River in Alaska (Franklin 1828). Franklin recorded many details of Inuvialuit lifeways and geographic distribution. A second team from Franklin's expedition traveled east from the Mackenzie Delta to the Coppermine River, recording cultural information, including a detailed illustration of an Inuvialuit house (Richardson 1828).

A number of mid-nineteenth-century expeditions made random ethnographic observations (e.g., Armstrong 1857; Hooper 1853; Richardson 1851; Simpson 1843), with the most extensive, although at times unsystematic, being recorded for Inuvialuit east of the Mackenzie Delta by the missionary Emile Petitot (1876, 1886, 1887; Savoie 1970). Additional, although less detailed, information was recorded by Bompas (Yerbury 1984), de Sainville (1984), and Lowther (Krech 1989; cf. Morrison 1989), all of whom traveled through eastern Inuvialuit territory in the final few years before the influx of whalers in 1889 (Bockstoce 1986). With the whalers came greatly increased interaction between Inuvialuit and Euroamericans, yielding a much greater volume of documentary evidence (Ingram and Dobrowolsky 1989a, 1989b). Beginning in 1892, the Anglican Missionary Isaac Stringer recorded detailed observations on Inuvialuit of the outer coast (Friesen 2004; Peake 1966). The most important ethnographic source after this period consists of Stefansson's (1919; Pálsson 2001) interviews with a number of Inuvialuit informants, which were recorded between 1908 and 1912, although Jenness (1924) and Rasmussen (Ostermann 1942) recorded a limited amount of information during the following decades.

Although early documentary sources that present Inuvialuit views of their own history are rare, Nuligak's (1966) autobiography provides an important emic view of the change in Inuvialuit society during the transition that resulted from interaction with Euroamericans and North Alaskan Iñupiat (cf. Behr 2004). In addition, several recent oral history projects have yielded important data relating to Inuvialuit life, particularly for the early and middle parts of the twentieth century (Hart 1994, 2001; Lyons 2009, 2010; Nagy 1994a,

1994b). As such, the archaeological research reported in this book complements the ethnohistoric record.

External Zone

Although not the focus of this book, in order to provide context for what follows, this culture history begins with a consideration of the early archaeological record, when the Mackenzie Delta region was in the external zone of the European world-economy. Although this chapter focuses on the culture history of the Inuvialuit and their immediate predecessors, it should be noted in passing that the study area contains traces of the continent's earliest peoples, including Paleo-Indian, Archaic, and related designations (Cinq-Mars 1979; Cinq-Mars et al. 1991; Clark 1981; Esdale 2008; MacNeish 1956b).

The Palaeoeskimo (also referred to as Arctic Small Tool tradition, or ASTt) record appears to represent sporadic occupations beginning around 3000 BC. It consists of occasional surface finds (McGhee 1974:26) and only a few excavated sites: ObRw-11, an early ASTt site near Cape Bathurst (Le Blanc 1991); the Qugyuk site, a multicomponent site containing an early ASTt component near Cape Bathurst (Le Blanc 1994b); the Lagoon site, a late ASTt site on southern Banks Island (Arnold 1981); the Crane site, a late ASTt site near Cape Bathurst (Le Blanc 1994a); the Engigstciak site on the Yukon mainland near Herschel Island, which yielded a number of disparate and poorly dated assemblages variously affiliated with ASTt, Choris, and Norton complexes to the west (MacNeish 1956a, 1956b, 1959); and Satkualuk, a Choris-related site on Richards Island in the Mackenzie Delta (Sutherland 2006). None of these sites can be considered to represent unequivocally terminal Palaeoeskimo, or those peoples who may have lived in the region just before the appearance of Inuvialuit around 1200 AD. Meanwhile, in the near interior south of the Beaufort Sea coast, there appears to have been stable occupation by Athapaskan peoples ancestral to modern Gwich'in from at least as early as 700 AD (Le Blanc 1984).

What is of greatest relevance to this book is that it is unknown if, at the beginning of the second millennium AD, the outer coast was abandoned, occupied seasonally by Athapaskan groups originating in the interior, or occupied by some local variant of Palaeoeskimo culture. It is important that none of the sites dating to this general period contain any evidence of exchanged goods originating in the European world-economy. Therefore, before about 1200 AD this region is considered to be in the external zone of the world-economy.

Autonomous Zone

The Early Thule Period

The Mackenzie Delta region is considered to enter the autonomous zone of the world-economy with the arrival of the Thule Inuit. "Thule" is the name given to the earliest ancestors of modern Inuvialuit and Inuit groups, who migrated from Alaska during the thirteenth century AD, replacing all earlier peoples in the coastal North American Arctic (Friesen and Arnold 2008). Their ancestral sites in Alaska and Siberia contain occasional evidence of interaction with the world-economy by way of Siberia, particularly in the prevalence of iron that had been traded into the region from east Asia for at least a millennium before the Thule developed (Mason 1998, 2009b; McCartney 1988). At least a tenuous connection was likely maintained between the Mackenzie Delta region and the world-economy by way of the Bering Strait region, following the Thule migration. This is seen, for example, in the presence of iron at the relatively early Washout site on Herschel Island (Yorga 1980) and at Pearce Point (Morrison 2009), thus justifying the inclusion of the region in the autonomous zone.

The nature of the earliest Thule occupation of the region is gradually becoming better understood, despite the erosional processes described earlier. It is now clear that Thule Inuit arrived relatively late from Alaska, rather than developing in situ in the Mackenzie Delta region from earlier peoples, as proposed by Taylor (1963). Currently, two early Thule sites are securely dated on the basis of artifact typology, radiocarbon dates, or both. First is the Washout site on Herschel Island, the early components of which were excavated by Yorga (1980). Washout is a complex site containing components from several periods. A "Natchuk" harpoon head recovered from the site's surface confirms that it was initially occupied during the earliest phases of the Thule migration, probably during the thirteenth century AD. Several houses have been excavated, with Yorga's House 1 the earliest, containing just one harpoon head (open-socketed Thule Type 2) and one formally finished arrowhead tang (knobbed). Although this house originally yielded very early radiocarbon dates, including one at 990±95 BP, recent redating indicates that it was more likely occupied during the fourteenth century AD (Friesen and Arnold 2008). Other houses at Washout excavated by Yorga, or later by Hunston, are more recent, with one occupied as late as the sixteenth century AD (Friesen and Hunston 1994; see Chapter 6). Unfortunately, the site has been completely destroyed by erosion.

The second definite early site in the region is Cache Point, on the East Channel of the Mackenzie River. This site appears to be the earliest Thule occupation that saw exploitation of the abundant beluga whales in the Mackenzie River. It

contains a minimum of twenty-three semisubterranean houses, and radiocarbon dates indicate that it was occupied during the thirteenth and fourteenth centuries AD (Friesen 2009a; Stromberg 1987). A third possible early Thule site, NeVc-1, was reported on the Yukon North Slope near the Blow River (MacNeish 1956a:49). However, later excavations at the site did not reveal additional early artifacts, a fact leading to the possibility that the original site was misidentified (Morrison 1990b).

Slightly farther afield, three other sites confirm the entry of Thule into the Beaufort Sea/Amundsen Gulf region during the thirteenth century AD. The Nelson River site on southern Banks Island has yielded a very early Thule artifact sample, including Sicco and Natchuk harpoon heads, as well as direct evidence for bowhead whale hunting (Arnold 1994b). Recent redating confirms a thirteenth-century AD occupation (Friesen and Arnold 2008). In addition, Morrison (2000a, 2009) has reported on two additional early Thule sites from east of the Mackenzie Delta—Tiktalik and Pearce Point—that resemble Nelson River in terms of architecture and other forms of material culture.

Many additional sites, although probably not dating to the earliest Thule occupations of the region, can still be attributed to the Thule period on the basis of the presence of open-socketed harpoon heads, which were no longer manufactured after about the middle of the fifteenth century AD (Morrison 1990a:99). Atkinson Point, a major bowhead whaling site until the late nineteenth century (McGhee 1974), has yielded typologically early harpoon heads, although artifacts derived from the full Inuvialuit period have been mixed together in this sample (Mathiassen 1930). Booth Island, near Cape Parry, has likewise yielded a large Thule collection (Morrison 1990a), and the Jackson and Vaughn sites on Cape Parry have also yielded Thule harpoon-head types (Taylor 1972). In addition, one open-socketed Thule 2 harpoon head was recovered from Barter Island, although Mathiassen (1930:21) believed that it is earlier than the remainder of the collection from that site. On the East Channel of the Mackenzie Delta, where the largest beluga whale hunting sites occupied during the contact period are located, two sites have yielded typologically early harpoon-head types that postdate the earliest Thule period: Radio Creek (McGhee 1974) and the later-occupied parts of the Cache Point site (Stromberg 1987). Finally, the Gutchiak site, located inland on the Eskimo Lakes, has yielded open-socketed harpoon heads (Morrison 1994; Morrison and Arnold 1994). To the west of the Mackenzie Delta region, the Barrow region saw intensive and continuous occupation from well before the Thule period to modern times (Ford 1959; Jensen 2009; Stanford 1976). Although many early sites must have been occupied at least briefly between Barrow and Herschel Island (e.g., Giddings 1957; Mathiassen 1930), most have been destroyed by coastal erosion.

With the probable exception of the Gutchiak site, which appears to be a seasonally occupied special-purpose fishing camp (Morrison and Arnold 1994:123), all these earlier Thule sites contain substantial semisubterranean houses constructed of driftwood and sod. These were certainly occupied during the winter, although some may have been occupied during warmer seasons as well (Nagy 1994a). All these semisubterranean houses are situated in locations accessible to whale hunting. Cache Point and Radio Creek are upstream from the known beluga-hunting sites in the Mackenzie Delta and presumably represented the best location for beluga hunting before the progressive silt buildup that occurred in the area (Friesen 2009a; McGhee 1974). The Barter Island, Washout, Atkinson Point, Booth Island, Jackson, Vaughn, Nelson River, Tiktalik, and Pearce Point sites are all located on points of land that would have been appropriate for the pursuit of bowhead whales in open water. Of these sites, only the subsistence pattern at Atkinson Point was described by early European observers, who recorded that bowhead hunting was a major occupation (Richardson 1851). Barter Island (Mathiassen 1930), Atkinson Point (Mathiassen 1930) and Nelson River (Arnold 1986a) have yielded whaling harpoon heads or whaling harpoon-head blanks, whereas Washout (Yorga 1980), Vaughn (Taylor 1972), and Barter Island (Jenness 1990) have yielded evidence of bowhead hunting in the form of large quantities of baleen or whalebone.

The Late Precontact Period

In the later precontact period, after about 1400–1500 AD, the number and variety of Inuvialuit sites increases. Large sites incorporating semisubterranean houses continue to be occupied on the outer coast, including at Barter Island (Jenness 1990), Washout (Yorga 1980), Atkinson Point (Mathiassen 1930), McKinley Bay (Betts 2007), and Iglulualuit (Morrison 1990a). Large beluga-hunting sites in the Mackenzie Delta also continue to be occupied, including Kitigaaryuit (McGhee 1974), Pond (Arnold 1994a), and Kuukpak (Arnold 1988, 1994a; Friesen and Arnold 1995a, 1995b). In addition, excavations at the Saunaktuk site have revealed that at least one inland site now contained semisubterranean houses (Arnold 1990; Morrison and Arnold 1994). However, in the later precontact period, the most significant shift is in the increased discovery and excavation of sites relating to warm-season occupations. These include specialized caribou kill sites on the Cape Bathurst Peninsula (the Bison Skull and Rita-Claire sites; Morrison 1997) and on the Yukon North Slope (Nagy 1990), as well as a number of special-purpose fishing sites on the Tuktoyaktuk Peninsula (Swayze 1994) and Eskimo Lakes (Morrison and Arnold 1994). The process through which the local variant of Thule society developed into late precontact and early contact Inuvialuit society is not yet fully understood. It

seems likely that early Thule migrants originally concentrated their subsistence efforts on the most optimal resources—bowhead and beluga whales—and employed logistical mobility strategies (*sensu* Binford 1980) to procure secondary resources. Over time, because of increased population or increased familiarity with local environments—as well as the introduction of new technologies, including fishing nets—additional resources were exploited, and a greater degree of regional differentiation occurred (Betts 2008; Betts and Friesen 2004, 2006).

By the late precontact period, Inuvialuit society had developed into a form that in many ways resembled the one known from the ethnohistoric record of the later protocontact and contact periods. This continuity is illustrated in the many aspects of material culture that remain consistent from precontact to protocontact levels at Kitigaaryuit (McGhee 1974:87). In addition, a semisubterranean house of the characteristic Inuvialuit cruciform structure has been tentatively dated to the sixteenth century AD (Betts and Friesen 2004) at the Kuukpak site, located on the East Channel of the Mackenzie Delta. Cruciform houses are so named because of their shape, with three large alcoves extending from three sides of a square central floor and an entrance tunnel extending from the fourth side. This house type was noted in several early ethnohistoric accounts and is most strongly represented at the very large and socially complex sites on the East Channel (Arnold 1994a; Friesen 1999, 2006). Subsistence and settlement patterns reconstructed on the basis of archaeological data also closely resemble their protocontact counterparts, as in the case of the sites such as Kuukpak (Arnold 1994a) and Kitigaaryuit (McGhee 1974) on the East Channel, whose inhabitants clearly relied to a great degree on beluga whale hunting (Friesen and Arnold 1995a, 1995b). Other regional groups depended to varying degrees on bowhead whales, fish, ringed seals, caribou, and migratory birds (Betts 2008; McGhee 1974:10–18).

By extrapolating from the ethnohistoric record of both the Mackenzie Delta region and North Alaska, it is reasonable to assume that Inuvialuit of this period were organized into regional groups with well-defined territories. The actual number of precontact regional groups cannot be determined with accuracy for this period. Some degree of stability is likely given the time depth of occupation of major "central sites" such as Pauline Cove/Washout, Kuukpak, and Kitigaaryuit, although it seems unlikely that the five (McGhee 1974), six (Morrison 1990a), or seven (Morrison and Arnold 1994) regional groups reconstructed based on the ethnohistoric record were stable and unchanging through the entire precontact period. For example, the very large precontact sites at Barter Island (Jenness 1990) probably indicate at least one additional regional group to the west of the territory occupied by late precontact Inuvialuit. South of the coastal Mackenzie Delta region, the interior was

continuously occupied by Athapaskan groups throughout this period (Le Blanc 1984). It is likely that the direct ancestors of the modern Gwich'in lived across the region, but specific information on their territorial organization is scarce. Furthermore, although some degree of interaction with Inuvialuit seems extremely likely (potentially ranging from conflict to trade), there is no direct evidence in the form of trade goods.

Before the present research, the nature of the precontact occupation on Herschel Island was known almost exclusively from Yorga's (1980) and Hunston's (Friesen and Hunston 1994) excavations at the Washout site and from surface materials collected by MacNeish (1956a). Unfortunately, the faunal samples from Yorga's Washout excavations have not been fully analyzed, although small samples from the midden and interior of House 1 have yielded very high proportions of seal bones (Salter 1979; Stuart-Macadam 1978). Yorga's (1980:45–46) House 1, the earliest excavated house on Herschel Island, consists of a rectangular main room with a single raised rear platform and with a possible kitchen alcove positioned to one side of the front wall. (Definitive interpretation is not possible because the house was partially destroyed before excavation.) Yorga's House 2, which may date somewhat later than House 1, contains a distinct side alcove that resembles alcoves from later Inuvialuit houses (Friesen 2006). Given the likelihood that the Yukon/Alaska North Slope was the primary corridor for communication between Alaskan and Inuvialuit groups, Herschel Island was probably always located in an important position for engaging in exchange of goods and information. In this connection, Washout House 1 contained a variety of both iron and copper objects, although Washout House 2 contained none. The fact that the early House 1 contained iron, probably originating in Asia (Yorga 1980:101), indicates that the Mackenzie Delta region was drawn into the autonomous zone of the European world-economy by the early Thule Inuit period.

Contact Periphery

The transition of the Mackenzie Delta region from the autonomous zone to the contact periphery coincided approximately with the onset of the ethnohistoric record, which is heralded by Alexander Mackenzie's descent of the Mackenzie River to the Beaufort Sea in 1789. Although Mackenzie did not meet any Inuvialuit, he recorded the presence of several recently deserted camps as well as details of Inuvialuit behavior, including their acquisition of iron tools, which he gleaned from Athapaskan Dene[2] whom he met during his travels (Lamb 1970:191–212). The institution of regular intensified trade to the west

at Barter Island had probably begun only a few years earlier (Morrison 1991a), indicating a likely increase in the availability of European goods as a result of ever-increasing Russian expansion into Alaska (Crowell 1997). However, it is unlikely that there was ever a long period without any interaction between Alaskan Iñupiat and Inuvialuit. In 1799 and 1809, two exploratory voyages by members of the North West Company were aborted because of overt hostility on the part of Inuvialuit (Wentzel 1823). In 1826, Franklin (1828) descended the Mackenzie River to Mackenzie Bay, where he and his crew were pillaged by a large Inuvialuit party before his continued journey to the west.

Of particular interest for the present study is the fact that Franklin met a small Inuvialuit hunting party on Herschel Island. Through his interpreter, Augustus, Franklin was told of Inuvialuit trade with the Iñupiat of northern Alaska, who exchanged a variety of goods, including Russian products, for fur, sealskin, and oil from the Mackenzie Delta region. The Inuvialuit also traded with Gwich'in (Dene) traders who descended the Firth River near Herschel Island. Franklin encountered a number of mobile Inuvialuit groups between Herschel and Barter Islands who were returning from trading expeditions to the west. Other Inuvialuit on the Yukon North Slope informed Franklin of the hostility of the East Channel regional groups to their east. A second party of Franklin's expedition, led by Richardson (1828), was also involved in brief fighting with Inuvialuit. A final exploratory journey of note was performed by Dease and Simpson of the Hudson's Bay Company, who in 1837 observed a party of Inuvialuit hunting caribou on Herschel Island (Simpson 1843).

In 1840, the Hudson's Bay Company built a trading post on the Peel River, eventually named Fort McPherson (Usher 1971b). The following decades saw ever-increasing access to Hudson's Bay Company trade goods by Inuvialuit, initially through Dene intermediaries and eventually through direct travel to Fort McPherson and to Fort Anderson on the Anderson River during its brief existence from 1861 to 1866 (Hohn 1963). During this period, Petitot (1876, 1886, 1887; usefully summarized and cross-referenced by Savoie 1970) recorded the most extensive ethnographic description of Inuvialuit life before intensive direct contact. The late 1880s saw an increased number of direct visits by Europeans to Inuvialuit territory, as recorded by Bompas (Yerbury 1984), de Sainville (1984), and Lowther (Krech 1989), all of whom traveled through eastern Inuvialuit territory in the final few years before the whaling boom that began in 1890. Herschel Island effectively passed out of the contact periphery in 1889 with the advent of direct, sustained contact with Euroamerican whalers who entered the Beaufort Sea that year in pursuit of bowhead whales.

Only a few archaeological sites dating to this period have been excavated. The most recent levels at Kitigaaryuit contained historical trade goods, al-

though the artifact samples from these later periods are relatively small (McGhee 1974). The most detailed site report from this period thus far published is Morrison's (1988) work at Kugaluk. This was a specialized caribou-procurement site on the Eskimo Lakes inhabited during the last half of the nineteenth century, containing three semisubterranean houses. A number of historical trade goods are present in the sample, with glass trade beads and metal debitage being the most numerous artifact categories. Finally, a number of burials dating to this period have been excavated by Osborne (1952) and Arnold (1986b). The latter excavation, at the Bombardier Channel site in the Mackenzie Delta near Inuvik, is a burial site containing the remains of at least four individuals. Associated artifacts are manufactured primarily of locally available material, although small amounts of iron, European copper, and one glass bead indicate both a protocontact date and the incorporation of trade goods into a burial context.

The role of introduced epidemic diseases must be assessed before interpreting the "ethnographic present" of any indigenous population in the New World (Dobyns 1983; Ramenofsky 1987). Epidemic disease can result not only in severely reduced population levels but also in social change, a decrease in economic efficiency, and a reduction in cultural complexity. In the central and eastern North American Arctic, McGhee (1994) has proposed that epidemic disease might have spread earlier and been more severe than previously thought, potentially leading to the abandonment of the "classic Thule" way of life. However, McGhee (1994:574) notes that western groups, including the Inuvialuit, were probably not catastrophically affected by earlier epidemics. This inference is based on the fact that the population collapse during the late nineteenth century implied that earlier epidemics had not yet altered susceptibility to disease (see Keenleyside 1990). The earliest known epidemic in the Mackenzie Delta region occurred in 1865, when scarlet fever and measles led to many deaths (D. Smith 1984). Based on a number of sources, McGhee (1974:5) documents further epidemics in 1868, 1870, 1871, 1900, and 1902, with the last two (measles outbreaks) being particularly devastating. It is safe to assume that many other epidemics occurred during this same period. The overall regional population dropped from an estimated mid-nineteenth-century level of two thousand or more to as low as one hundred thirty in 1910 (Usher 1971a). However, variability in the rate of population loss during this period is not well understood (cf. Fortuine 1992).

Together, the archaeological and documentary sources reveal that the protocontact Inuvialuit were divided into a number of regional groups (see Figure 7), with five probably existing in the late nineteenth century (McGhee 1974) and at least two or three additional regional groups existing earlier (Alunik et al. 2003; Morrison 1990a; Morrison and Arnold 1994). Inuit regional groups

FIGURE 7. Approximate locations of nineteenth-century regional groups in the western North American Arctic and Subarctic (based on information in Alunik et al. 2003 and Slobodin 1981). (Illustration by Matthew Walls.)

across the Arctic were named with the suffix "miut," meaning "the people of," usually named after the primary settlement in the region. Thus, the regional group that was centered on Herschel Island, which is the focus of this book, was named "Qikiqtaryungmiut"[3] after their primary settlement of Qikiqtaryuk at Pauline Cove on Herschel Island. Likewise, the three regional groups to their east were named "Kuukpangmiut" after the central village of Kuukpak, "Kitigaaryungmiut" after Kitigaaryuit, and "Nuvugarmiut" after Nuvugaq (Atkinson Point). The annual subsistence-settlement patterns of these groups varied, depending on the nature of the major resources on which they depended. The groups inhabiting the East Channel of the Mackenzie River (Kuukpangmiut and Kitigaaryungmiut) are the best known of the Inuvialuit regional groups, both because they were frequently encountered by Euroamericans and because archaeological fieldwork has been most intense in this region (e.g., Arnold 1994a; Friesen 2004; McGhee 1974). These groups had access to beluga whales, which constituted a focal resource (Friesen and Arnold 1995b), although many other species were also consumed (Balkwill and Rick 1994). In the principal settlements on the East Channel, Kitigaaryuit and Kuukpak, large populations assembled for the summer hunts and again in winter to take advantage of cached beluga whale meat and blubber from these hunts. During other seasons, East Channel people dispersed from the major sites of Kitigaaryuit and Kuukpak to harvest secondary resources. Other regions saw different subsistence economies, with beluga whales playing a lesser economic role and bowhead whales, fish, seals, and caribou contributing more to the diet (Betts 2008).

Many aspects of traditional Inuvialuit society were shared with other Inuit-Inupiaq people, including much of their language, technology, belief systems, and significant reliance on marine resources. The closest connections, however, existed to the west, with Alaskan Iñupiat. With them, the Inuvialuit shared virtually all categories of material culture, including highly visible and socially meaningful phenomena such as the construction of semisubterranean driftwood houses and the wearing of labrets (McGhee 1974; D. Smith 1984). Also, like Iñupiat, their relatively complex social organization was based around regional groups in tightly defined territories, within which the primary unit was the extended family, each led by a powerful *umialik* (headman).

By this period, Gwich'in (known by a variety of names in the ethnographic literature, including "Kutchin" or "Loucheux") were fully established south of the coastal Inuvialuit territory and were divided into around nine regional groups stretching from the lower Mackenzie River in the east to the Brooks Range near the Colville River in Alaska to the west (Slobodin 1981). The historical record includes references to both trade and hostility between Gwich'in and Inuvialuit (e.g., Bockstoce 2009). Relatively little has been published on the archaeology of

this period of Gwich'in culture history, although upper levels of Klo-kut (Morlan 1973) and Rat Indian Creek (Le Blanc 1984) contain historical trade goods indicating continuous occupation through to the nineteenth century or later.

During the protocontact period, the region west of the Mackenzie Delta was home to the Qikiqtaryungmiut, who inhabited a number of winter villages. In 1826, their most westerly settlement was located on Demarcation Point near the Yukon-Alaska border (Franklin 1828:142). Herschel Island held three winter villages (Russell 1898:149), with the one at Pauline Cove probably being among the largest villages in the region. In August of 1826, Franklin (1828:172) recorded that "nearly the whole of the tribe was now collected in the vicinity [of Herschel Island] for the purposes of hunting deer, and catching whales and seals for the winter's consumption." In addition to these species, fish would also have been an important food source (McGhee 1974:11; Nagy 1994b:77; Yorga 1980:35–36). Winter subsistence would have been based on stored food and on the capture of seals and, possibly, fish obtained through the sea ice. Because of its location on the major trade route between northern Alaska and the Mackenzie Delta, the people of the Yukon North Slope, including Herschel Island, may have engaged in trade to a greater extent than did many other Inuvialuit groups.

Marginal Periphery

In 1889, the Euroamerican whalers who had been whaling in the Bering and Chukchi Seas since the mid-nineteenth century finally traversed the treacherous northeast coast of Alaska to reach the Beaufort Sea and Amundsen Gulf, the last refuge for the dwindling bowhead whale population (Bockstoce 1977, 2012). Whalers came into contact with Inuvialuit along the entire stretch of coast, but interaction was most intense at Herschel Island, and to a lesser extent Baillie Island, both of which were used as overwintering harbors. During this period, the ethnohistoric record expands rapidly in volume, with information contained in whaler's logs, Royal Canadian Mounted Police records, mission records, trading accounts, and autobiographies. The impact on Inuvialuit society was immediate and intense, with at least four main agents of change operating during the final decade of the nineteenth century.[4]

First, an increased volume of trade goods became available, because direct trade was now possible between Inuvialuit and whalers. Previously, trade for Euroamerican goods occurred either with the Hudson's Bay Company or through intermediaries with Russians or American whalers in Alaska. In return for the resulting increased availability of goods, local Inuvialuit ex-

changed fish, caribou meat, furs, and labor of various forms, including caribou hunting and sewing of warm skin clothing.

Second, increased waves of epidemic disease flowed into the Mackenzie Delta region. Although epidemics had begun to affect the region at least twenty-five years earlier, an increased frequency of direct contact led to more opportunity for infection, and the introduction of new illnesses (Whittaker 1937:115). As noted previously, the epidemics of 1900 and 1902 reduced the population drastically (Jenness 1964:14). In fact, populations appear to have dropped to levels that probably could not be sustained without the influx of new populations from outside. Epidemics not only reduced the population but were also responsible for the loss of much oral tradition and cultural knowledge (e.g., Nuligak 1966:21).

Third, increased immigration of indigenous peoples from outside of the Mackenzie Delta region occurred, rapidly altering the ethnic makeup of local populations. Many Inuit, primarily interior North Alaskan caribou-hunting peoples, were brought by whalers as "ship's natives," specifically to hunt caribou for food during overwinterings (Bockstoce 1986:274–275). Although some immigration undoubtedly occurred before 1889 (Stefansson 1919), its pace accelerated markedly after that date. Other Inuit, including Siberian and coastal Alaskan Inuit, also arrived, and many chose to settle in the Mackenzie Delta region. In addition, large numbers of inland Gwich'in regularly traded with the whaling ships at Herschel Island (Cook 1926:56–75). The impact of these immigrants on local Inuvialuit populations was significant. For a society already weakened by epidemic losses, new indigenous ideas must have hastened the changes that were already underway as a result of interaction with Euroamerican society (e.g., Stefansson 1919:195).

The fourth agent of external influence was the combined effects of Euroamerican religious and political ideology. The whalers themselves would have had an important influence, but it was relatively short-lived given the fact that the average whaling cruise lasted about two years. However, the arrival of the whalers on Canadian territory led to the eventual deployment of Royal Northwest Mounted Police, who finally arrived in 1903 (Bockstoce 1986). The presence of police and the concept of law enforcement, which eventually included the hanging of two Coronation Gulf Inuit on Herschel Island in 1924 (Morrison 1985:137), must have represented a powerful statement of Euroamerican dominance to local Inuvialuit. Missionary activity also increased greatly in the period following 1892. Before that year, a few short trips had been made into Inuvialuit territory by Petitot (1876, 1887), Bompas (Yerbury 1984), and Lefebvre (Duchaussois 1923). However, much of the missionary activity between the 1850s and 1880s was restricted to Fort McPherson, where Inuvialuit traders appeared annually. Steps toward a more permanent

mission were begun in 1892, when the Anglican missionary Isaac O. Stringer arrived at Kitigaaryuit (Friesen 2004), and in the following year when he visited Herschel Island for the first time. Stringer continually expanded his mission through regular visits to the coast, and in 1897 a permanent mission was established on Herschel Island (Peake 1966). Stringer and his wife not only conducted services but also began a school for Inuvialuit children.

Very little archaeological research has previously been aimed at survey for and excavation of Inuvialuit sites dating to the period after 1889, because this period is considered relatively well represented in the ethnohistoric record. In 1973, Bockstoce (1991, n.d.) excavated a house on Herschel Island interpreted as having been occupied during the 1890s. However, because the artifact sample was very small and was destroyed in a fire, it is difficult to interpret the nature of this occupation with any degree of certainty. Hunston (pers. comm. 1990) excavated a second house on Herschel Island that dates to this period; however, its status as Inuvialuit or Euroamerican cannot be confirmed on the basis of the artifact sample. Finally, McGhee's (1974) excavations at Kitigaaryuit included two contact period components that date to the period between 1840 and 1902. These components are potentially informative, but unfortunately the period they represent is too long to yield fine-grained data for observing culture change in the region.

Herschel Island occupies an important place in the history of the North American Arctic during this period, which represents the initiation of sustained direct contact between Inuvialuit and Euroamericans. Because it contained the only adequate harbor on the Yukon North Slope, whaling ships overwintered at Pauline Cove beginning in the winter of 1890–1891. At its peak between 1894 and 1895, Pauline Cove harbored fifteen whaling ships and a total population of over five hundred whalers, Alaskan Inuit, Siberian Inuit, and Dene (Bockstoce 1986). This concentration of people and resources in the form of trade goods in turn attracted many Inuvialuit.

Summary

The period after about 1907 will not be considered in this book. During this period, the Mackenzie Delta region entered the dependent periphery of the world-economy, and the position of Herschel Island within Inuvialuit society became secondary because of the increasing permanence of the Mackenzie Delta communities to the east. Today, Herschel Island is used seasonally by Inuvialuit travelers, hunters, and trappers, as well as tourists, but is not occupied year-round.

5

Changing Inuvialuit World-Systems: Expectations

IN THIS CHAPTER, the various strands of culture history and theory already discussed will be woven together to develop a set of expectations about how Inuvialuit world-systems were organized and how they may have changed as they became more and more closely connected to the European world-economy. These expectations are intended to serve as a framework to guide exploration of the many data categories that relate to interaction.

Before proceeding to the specific expectations, however, one important additional source of inference will be described briefly: the interaction networks of the Iñupiat of North Alaska.

A Critical Analogue: North Alaskan Iñupiat Interaction Networks

The discussion of hunter-gatherer world-systems in previous chapters has been kept at a general level, in order to begin to address the full range of types of interaction and factors affecting those interactions for hunter-gatherers, broadly speaking. However, before continuing on to imagine how world-systems may have functioned in the Mackenzie Delta region, it is important to note that Inuvialuit were of course acting within a particular historical and cultural context that cannot be ignored in attempting to understand past intersocietal networks. Unfortunately, the Inuvialuit ethnohistoric record is erratic and highly variable in its coverage of many subjects, including those relating to interaction, although where possible it will be referenced in later chapters.

However, just to the west of the Mackenzie Delta region lies Northwest Alaska, home to Iñupiat regional groups who were closely related to Inuvialuit in virtually every sense, from language to material culture. Unlike the Mackenzie Delta region, Northwest Alaska is home to a very high-resolution

ethnographic record, combining a diverse and fine-grained ethnohistoric database derived from whalers, traders, and explorers with the more recent ethnographic work of trained anthropologists. As such, an overview of Iñupiat interaction provides an important analogue for this book, albeit one that, as in the case of all analogues, must be approached critically. The following outline is based largely on the work of Ernest S. Burch, who produced an important and comprehensive series of monographs relating to Alaskan Iñupiat in a region centered on Kotzebue Sound and adjacent portions of the northern Alaskan coast (Burch 1998, 2005, 2006; see also Sheehan 1997; Spencer 1959). Burch's reconstruction relates to the first half of the nineteenth century and therefore represents a society that was already impacted to some degree by interactions with the expanding European world-economy, although Burch (2006:2) has made a strong case that this impact did not lead to overwhelming changes before 1848.

Northwest Alaska was divided into what Burch has termed "nations" or "societies," roughly equivalent to the term "regional group" as used in this book; I will continue to use this last term for consistency. In Northwest Alaska, people considered themselves to be part of a particular named regional group, each of which was largely (but not exclusively) endogamous (Burch 2005:18). During the annual cycle, "virtually all of the members of a given society managed to see one another," and in most societies a general aggregation of all members was held at least once a year (Burch 1980:270). Regional groups lived in extremely well-defined territories with closely maintained and precise boundaries; in fact, individuals caught in a neighboring territory who were not immediately able to establish a relationship with a local relative or partner risked death (Burch 2005). At the same time, regional boundaries were permeable under specific conditions, such as travel for trade, to reach specific traditional hunting or fishing locales, or for ceremonies such as the "messenger feast" (Burch 2006). Not all regional groups were equal; depending on their position relative to important resources and trade routes, some had much higher populations and greater wealth. In the nineteenth century, populations of most regional groups ranged from three hundred to eight hundred, with one outlier of 1,300 associated with the particularly advantageous location Tikigaq (Point Hope) (Burch 2006:7).

Of particular relevance to a study such as this one, which is based on interactions between regional groups, is the degree to which membership in particular regional groups was reflected in the material record. Ideally, to understand the functioning of large-scale interaction, one would be able to re-create the boundaries of these groups on the basis of remains recoverable through archaeology. Unfortunately, most categories of material culture were shared across

the entire region with no significant differences, with only a few exceptions (Burch 2005:24–26). The most noteworthy differences that did exist were in clothing styles, particularly parkas. Visible from a distance, parka patterns would have been important symbols of group membership. However, despite generally excellent preservation in much of the Arctic, skin clothing does not preserve in great enough numbers to be useful in tracing group membership into the past. Facial tattoos may also have signified group membership; however, for obvious reasons they are also not accessible in the past except under extraordinary circumstances. Finally, there is some indication that *umiak* (large open skin boats; plural *umiat*) or kayak paddles were decorated and could allow individuals to be recognized, but again this is not a practical way to reconstruct social identity from the archaeological record because of the rarity of well-preserved paddles.

Interactions between Northwest Alaskan regional groups are best described as intense, and they can be placed into several major categories. Before describing these, it is important to note that Iñupiat (as well as Inuvialuit) had access to particularly efficient and effective transportation technology in the form of sleds and *umiat*. (Although kayaks were also present, they were used primarily for hunting.) Sleds, which could be pulled by dogs, people, or a combination of both, had a maximum capacity of 270 to 360 kg (Burch 2005: 166) and could cover roughly 3 to 5 km per hour (Burch 2006:286). *Umiat* had a much greater capacity, with the largest able to carry at least 4,500 kg, although most were smaller (Burch 2006:291). Depending on weather, and on whether they were being tracked along shore or sailed, *umiat* could cover 6 to 16 km per hour (Burch 2006:289), although under poor conditions progress could be much slower. Both forms of transport were relatively hardy if maintained skillfully. The presence of these modes of transport had a very significant impact on many facets of Iñupiat society, and in particular those related to interaction (cf. Ames 2002), by making long-distance transport of people and large volumes of material relatively rapid and efficient.

Interregional interaction was tightly intertwined with local social structures, two aspects of which were particularly important. First, a formal system of partnerships existed between individuals of different regional groups. Partnerships were the conduit through which most trade occurred and information was exchanged, and they provided a safety net for families forced to leave their home region because of difficulties such as famine (Burch 2005). Second, Iñupiat society was structured around extended families led by powerful men known as *umialiit* (singular, *umialik*). These *umialiit* competed for prestige and wealth, and their positions were in part maintained through redistribution both of staples (e.g., whale meat and fat) and of rarer exotic goods (Burch

2006). Thus, interaction was a central requirement for the functioning of the system, as a process that circulated materials and that could be used to convert surplus into other materials (Sheehan 1985). These two aspects of Iñupiat social organization—status differences and partnerships—came together in the tendency for *umialiit* to have significantly more partners than other people did (Sheehan 1995).

Trade was extremely widespread and highly structured. It could occur in many contexts, including at "messenger feasts," the relatively frequent formal gatherings that brought together members of different regional groups for feasting, ceremony, information exchange, and trade in the host's community (Burch 2005). However, trade was most prominently represented at special events known as "trade fairs." These were formalized aggregations centered on trade (although many other activities took place there as well), which occurred at prearranged locations, usually on an annual basis. Some trade took the form of gift giving between partners, but Burch (2005:189) indicates that much was "open-market" barter in which individual traders sought the best return for their goods. Events surrounding trade fairs were subject to special rules. For example, hostile interactions were kept to a minimum, and in many cases groups were allowed to travel to trade fairs through otherwise hostile territories.

The largest and best-known nineteenth-century Alaskan trade fair, at Sisualik on Kotzebue Sound, regularly attracted at least one thousand—and likely closer to two thousand—people who assembled to exchange a vast number of goods. Participants came from fifteen separate regional groups, and many traveled hundreds of kilometers over many weeks to get to the trade fairs (Burch 2005:188). Virtually anything could be traded, ranging from high-value-to-weight preciosities such as labrets, beads, metal, and special skins to bulk goods such as dried meat or fish, whale oil, seal oil, and caribou skins. (Note that the division between preciosities and bulk goods is somewhat arbitrary, and that preciosities, such as metal, can of course be desired for their functional usefulness in addition to having value in terms of wealth or prestige.) It is significant that some regional groups relied on large-scale trade in bulk goods for the effective reproduction of their society; one particularly well-known example involves coastal sea mammal oil being traded to interior zones for caribou skins (Spencer 1959). Coastal people required the caribou skins for effective winter clothing, whereas interior groups required large amounts of oil to supplement their winter diet. In this connection, it is important to bear in mind the presence of *umiat* and sleds that made exchange of these materials in large volumes practical.

In addition to these forms of relatively positive interaction, intergroup conflict was a constant threat in Northwest Alaska. Warfare is well represented in

oral histories and place names, and there is little doubt that it was a constant reality for early nineteenth-century Iñupiat. Hostile interactions ranged from spontaneous small-scale hostility through small raids to pitched battles potentially involving hundreds of people (Burch 2005). Outside of special circumstances, such as travel to trade fairs, individuals found beyond their regional group's territory were at extreme risk of hostility and even death. The proximate cause of much of the conflict was revenge (Burch 2006:329), and the object in many cases was to kill as many people as possible, up to the entire population of a settlement. On rare occasions, several regional groups might form alliances against others, although most hostilities were simply between two regional groups. Warfare is potentially visible in the archaeological record of Alaska, based on slat armor, war clubs, special arrowheads, direct evidence of trauma to human skeletal remains, defensive placement of sites, and construction of defensive features (Burch 2005; Mason 2009a).

Although it is clear that Northwest Alaskan Iñupiat interregional interactions resembled those of Inuvialuit in many ways, the precise degree of similarity is not always clear. Furthermore, both Iñupiat and Inuvialuit societies were not static, but rather were subject to change over time and space. Therefore, in the discussion of world-systems that follow, the Iñupiat record will be referred to frequently in both the development of expectations in this chapter and their evaluation in subsequent chapters. However, a precise fit between the two cases will not be assumed; rather, it will be evaluated on the basis of specific archaeological and ethnohistoric evidence.

Expectations for Changing Qikiqtaryungmiut World-Systems

Increasing interaction between hunter-gatherer world-systems and the expanding European world-economy across the globe was marked by a vast array of potential impacts, ranging from the introduction of new ideas and social formations to population losses resulting from epidemic disease. However, for present purposes I will focus primarily on two categories of impact: (1) the distribution of subsistence resources, whether acquired locally or traded, and (2) the availability and variety of externally derived preciosities. In many cases, colonial interaction led to new categories of trade goods being available in large quantities, and they represented a great range of types of goods, including many that performed new functions (such as tobacco) or represented superior technologies (such as metal needles and firearms, in some circumstances). From the point of view of specific indigenous world-systems, the

volume and variety of available Euroamerican goods generally increased over time, in a process that could be gradual, rapid, or punctuated (Gosden 2004).

Extrapolating from the discussion in Chapter 3, increased availability of bulk resources has the potential to affect hunter-gatherer world-systems by influencing both the overall density of various resources and their spatiotemporal distributions. In the colonial period, overall density is often affected simply by the addition of traded bulk subsistence goods. The addition of flour, sugar, lard, and other such foodstuffs in large quantities represents a new and potentially important subsistence resource with a number of possible effects, including increased population density. At the same time, these bulk resources were often available only in specific locations such as trading posts, making them a spatially discontinuous resource. Their availability in restricted areas is predicted to lead to increased breadth and depth, affecting patterns of exchange, alliance formation, and conflict. In addition, if the regional differences in imported bulk goods are great enough, they can potentially lead to changes in patterns of internal differentiation, with groups that have access to these resources assuming a core status.

Increased availability of preciosities can also potentially impact indigenous world-systems by leading to increased demand and thereby to increased world-system depth and breadth, because of active efforts by members of regional groups to acquire them. If internal differentiation already exists within a world-system, it can be heightened by efforts on the part of agents within the core group to acquire these preciosities. However, it is unlikely to alter the location of core societies.

Thus, as a general rule, as hunter-gatherer world-systems become increasingly incorporated into the European world-economy, they will (1) increase in breadth (externally derived resources represent a reason to engage in interaction with a greater range of regional groups); (2) increase in depth (interaction becomes increasingly important to each regional group); and (3) in some cases change in patterns of internal differentiation (increase in degree of internal differentiation, alter the location of core areas, or both).

On the basis of the outline of culture-historical developments in the Mackenzie Delta region presented in Chapter 4 and the theoretical framework presented in Chapter 3, specific expectations can be offered for the changing indigenous world-systems in which the Qikiqtaryungmiut (Inuvialuit inhabitants of Herschel Island and the Yukon North Slope) participated, considered in terms of the stages of incorporation defined in Chapter 2. These expectations will combine the very general expectations regarding changing frequencies of preciosities and bulk goods as outlined in Chapter 3 with more specific factors at play in the Mackenzie Delta region, especially those that relate to economy.

The following discussion corresponds to three stages of incorporation into the European world-economy: the autonomous zone, the contact periphery, and the marginal periphery. The external zone will not be elaborated on, because the archaeological record for this period (Palaeoeskimo) is too fragmentary. The dependent periphery will not be discussed, because during this period the indigenous world-system ceased to exist as a relatively independent entity, and because the archaeological record is lacking.

In the case of the autonomous zone, expectations for how the indigenous world-system functioned are based on existing archaeological data as well as cautious extrapolation from the early ethnohistoric record of the Mackenzie Delta region and Northwest Alaska, as outlined above. Note that these are expectations only, intended to be evaluated in later chapters; thus, they represent an initial guide for understanding how indigenous world-systems were organized. For each subsequent period, expectations will be developed for *changes* in the indigenous world-system. These predicted changes will therefore usually be conceived of as *relative* rather than absolute, calling for more or less of an archaeologically observable phenomenon when compared to the preceding period. Where possible, ethnohistoric data will be used to provide additional information with which to evaluate the expectations.

A final important point is that, as outlined in Chapter 3, the best way to understand hunter-gatherer world-systems is to take a "group-centric" approach. In the present case, expectations are developed from the perspective of the regional group centered on Herschel Island, the Qikiqtaryungmiut. The world-system of which they were a part is no doubt closely similar, but not identical, to those of other neighboring Inuvialuit regional groups.

Autonomous Zone

During the late precontact period, from approximately 1500 to 1800 AD, Herschel Island is interpreted as having been located in the autonomous zone of the European world-economy. Thus, by definition, only slight and generally indirect contact occurred between Inuvialuit and the world-economy, usually in the form of exchange of preciosities through intermediaries. These preciosities were exchanged in the same general pattern as were indigenous preciosities. Inuit societies throughout the North American Arctic were at least sporadically linked to the European world-economy in an indirect fashion, as manifested in low frequencies of Asian or European trade goods in many Inuit sites (McCartney 1988, 1991). Therefore, the indigenous world-systems in which the Qikiqtaryungmiut participated should be based primarily on the distribution of regionally available exploited subsistence resources and should be affected only marginally by interaction with the European world-economy.

Analogy with ethnohistorically documented hunter-gatherers is not sufficient to determine the nature of the precontact world-system in the Herschel Island region, because indigenous peoples were often greatly affected by interaction with the European world-economy before they were described by anthropologists and others (e.g., Wobst 1978). Therefore, the world-system that existed in the precontact period must be reconstructed as much as possible on the basis of archaeological evidence. This evidence will serve as a baseline against which to compare later changes in indigenous world-systems that result from increasing incorporation of this region into the European world-economy.

Initial expectations, however, can be generated on the basis of the model of hunter-gatherer world-systems developed above, which emphasizes two main factors: distribution of exploited subsistence resources, and the availability of and desire for trade in preciosities. Distribution of exploited subsistence resources varies in terms of overall density and spatiotemporal variability. One crude means of inferring the overall density of exploited subsistence resources is to reconstruct a region's population density. For the Inuvialuit region as a whole, precontact population estimates range from two thousand to four thousand people (McGhee 1974; Usher 1971a). Even if the figure of four thousand individuals is used, and if a coastal strip of only 50 km in width is projected as having been occupied across the region from Demarcation Point to Cape Bathurst, population density is calculated as only 0.13 persons per square km. This density is near the low end of the scale of ethnographically known hunter-gatherer population densities presented by Hassan (1975), which range from 0.02 to 102 persons per square km. Therefore, the overall density of exploited subsistence resources is inferred to be relatively low as well. It must be reemphasized that despite these relatively low population densities and large territories, the Inuvialuit had access to extremely efficient transport technologies in the form of *umiat* and sleds. Thus, constraints on travel and on transport of harvested resources and traded bulk goods were much less severe than in many other societies. This may well have enabled some intensification of interaction, as it seems to have for neighboring Iñupiat regional groups. Another important point is that, despite a relatively low overall density, there were some local "hot spots" that allowed locally higher populations to aggregate at least on a seasonal basis and to lead a more sedentary lifestyle.

In terms of spatiotemporal variability in exploited resource distributions, the greater Mackenzie Delta region can be considered to be highly variable in both dimensions. In the ethnographic period, the East Channel of the Mackenzie Delta contained a dense and predictable resource in the form of beluga whales, whereas other regional groups relied on variable proportions of

bowhead whale, caribou, fish, seals, and other taxa. The assumption that precontact subsistence economies were similarly variable will be evaluated in subsequent chapters. Temporal variability was also very high. With the partial exception of seals (which are always present but vary in their locations and ease of capture through the year), almost all other major species are available during only brief periods of the year, with summer being a time of peak abundance for several critical species. According to the model presented here, then, an indigenous world-system characterized by low overall density and high spatiotemporal variability in exploited subsistence resources should incorporate an intermediate degree of interaction, as expressed in breadth and depth. In addition, some degree of internal differentiation might be observable, with the East Channel acting as a core because of the very high density and reliability of beluga whales.

Finally, two sets of factors relating to availability of, and desire for, preciosities may have constrained the nature of precontact Inuvialuit world-systems in the region. First, many early Inuit societies across the Arctic, particularly those that continued to live in relatively large and sedentary winter settlements based on stored food, likely were organized around extended families led by *umialiit* (e.g., Friesen in press a; Savelle and Wenzel 2003; Whitridge 1999 for discussion of this issue for Thule Inuit of the central Arctic). Internal social relations in these communities were built in part around competition for status, which could be expressed in several ways, including ownership and redistribution of preciosities. This, in combination with the likely presence of partnerships that were sometimes symbolized by exchange, is expected to increase the desire for preciosities in these regional groups. The second factor relates simply to the availability of preciosities as an issue relevant to their exchange. Although the value of preciosities is of course defined largely on subjective, local grounds, at the same time the presence of materials with known advantageous properties can lead to more exchange. The broad region within which Inuvialuit were situated included a number of items that fit this characterization, including native copper, soapstone, amber, ivory, and occasional objects of iron or other materials acquired indirectly from the European world-economy. Thus, factors relating to exchange in preciosities are expected to have a moderate impact on the Inuvialuit world-system, as outlined in the following sections.

*1. **Autonomous Zone Expectations—Breadth.*** World-system breadth should be relatively low, although regular interaction should be maintained between neighboring regional groups.

a. Interaction with neighboring regional groups should be evident in parallel development of artifact types.
b. Trade goods should originate in a limited number of regions.
c. Aggregation sites containing evidence of occupation by more than one regional group should be rare.
d. Boundaries between regional groups may be indicated by stylistic differentiation of artifacts that convey social meanings.

2. Autonomous Zone Expectations—Depth. World-system depth should be relatively low, with the main purpose of interaction being the reinforcement of alliances and partnerships.

a. Trade goods should be rare.
b. Trade goods should occur in relatively few functional categories.
c. Trade goods should not fully replace locally produced technology in any functional category.
d. Trade in bulk goods should be absent or rare.
e. Efforts to acquire imported trade goods should not noticeably affect the subsistence-settlement system, which should continue to be based on the distribution of locally available exploited subsistence resources.
f. Efforts to acquire products for exchange, such as furs or sea mammal oil, should not noticeably affect the subsistence-settlement system.
g. Evidence for interregional conflict may exist in the form of slat armor, weapons, or incised images.

3. Autonomous Zone Expectations—Internal Differentiation. Internal differentiation may occur if regionally variable concentrations of exploited subsistence resources exist. On the basis of extrapolation from the ethnographic record, and the known distribution of major subsistence resources, the East Channel is expected to form a core region.

a. Significant differences should exist in the density of available resources between the East Channel and Herschel Island regions.
b. Core groups should have a greater population density.
c. Core groups should exhibit a greater degree of social complexity.

Contact Periphery

For societies in the contact periphery, increased contact with the world-economy occurs, either in the form of occasional direct exchange with agents of the world-economy or through an increased frequency of indirect exchange. Ex-

change with the world-economy (as opposed to exchange between indigenous regional groups) is still either exclusively or predominantly in preciosities. This greater availability of preciosities is expected to lead to increased demand, which in turn leads to more efforts on the part of regional groups to obtain these goods through exchange, alliance formation, or other forms of interaction. The degree of internal differentiation might increase if preexisting core societies gain differential access to preciosities; however, the location of core regional groups will not change, because they are expected to continue to be based on the distribution of locally occurring subsistence resources.

Herschel Island is interpreted to have been in the contact periphery of the European world-economy after around 1800 AD. Agents of the European world-economy did not have direct control over the region, but the effects of interaction became more pervasive. Direct contact between Qikiqtaryungmiut and Europeans was rare, perhaps occurring once per generation, although regional groups to the east and west engaged in more frequent contact. Although the Qikiqtaryungmiut had always been located on the major trade route between North Alaska and the Mackenzie Delta, a significantly greater frequency and variety of trade goods were now indirectly available from Russian and American traders through Alaska and from Hudson's Bay Company posts in the Mackenzie Delta.

A second factor that may have affected indigenous world-systems in the Mackenzie Delta region is the reduction of the bowhead whale population through intensive hunting by Euroamerican whalers. The western Arctic bowhead whale population was discovered by Euroamericans in 1848, and from that year to 1914 the population was reduced from an estimated twenty-three thousand to three thousand individuals (Bockstoce and Burns 1993:574). It is important to note that approximately two-thirds of the whales killed were hunted during the first two decades of this period (Bockstoce and Botkin 1982:114). Furthermore, Euroamerican whalers probably selected larger, and therefore sexually mature, bowheads, thus reducing the reproductive potential of the remaining population (Bockstoce and Burns 1993:574). This circumstance may have affected indigenous whaling even more, because reduced reproduction would have led to fewer young animals, particularly yearlings, which constituted the focus of indigenous whale hunts in other regions, including the central Canadian Arctic (McCartney and Savelle 1993; Savelle and McCartney 1990, 1991, 1994), and northwestern Alaska (McCartney 1995). Because bowhead whales likely constituted a significant portion of the exploited subsistence resources of some precontact Inuvialuit regional groups, a reduction in their numbers could produce changes in the world-system. Specifically, bowhead whale hunting groups might have been reduced in

population, and possibly also in degree of sedentism, relative to groups relying on other resources such as beluga whales.

The increased availability of trade goods and the potential for reduced bowhead whale populations are expected to affect the indigenous world-system in a number of ways.

*4. **Contact Periphery Expectations—Breadth.*** World-system breadth should increase, as seen in interaction with a greater number of regional groups, including those to the west (Iñupiat), south (Gwich'in), and east (Inuvialuit regional groups, and beyond them the Copper Inuit).

a. Trade goods should originate in a greater number of regions.
b. Aggregation sites containing evidence of occupation by more than one regional group should increase in number or density of occupation.
c. Boundary maintenance should decrease, as reflected in a reduction of stylistic differences for artifacts that convey social meanings.

*5. **Contact Periphery Expectations—Depth.*** World-system depth should increase.

a. Trade goods should appear in higher frequencies.
b. Trade goods should appear in a greater number of functional categories.
c. Trade goods should now replace some preexisting artifact categories.
d. The proportion of traded bulk goods to preciosities should grow.
e. Increased importance of long-distance trade, and a reduction in availability of bowhead whales, should in some cases combine to boost residential mobility and reduce time spent in winter dwellings.
    i. Less time should be spent in winter dwellings, which should be less substantial, requiring less labor in their construction.
    ii. In winter occupations there should be less emphasis on stored food, represented by species obtained during the summer.
f. Greater effort should be made to acquire materials for export, as evident in, for example, higher frequencies of bones of fur-bearing animals.
g. Conflict should be reduced in order to enable other forms of interaction.

*6. **Contact Periphery Expectations—Internal Differentiation.*** The degree of internal differentiation should increase, particularly when the Qikiqtaryungmiut are compared against regional groups on the East Channel, as a result of (1) a reduction of Beaufort Sea bowhead whale populations (reducing the resource density available to outer coastal regional groups relative to those on

the East Channel); and (2) increasing access to Hudson's Bay Company posts by regional groups on the East Channel. In addition, greater quantities of available European preciosities might be operationalized by status-seeking individuals in core areas, thus leading to further increases in internal differentiation. If world-system breadth extends into North Alaska, Iñupiat groups near Barrow may function as a second "core" because of the long-standing reliability of bowhead whaling in that region, combined with heightened access to trade goods from Russian sources (indirectly) and, during later periods, Euroamerican whalers (directly).

a. Increased differences in population density should be evident.
b. Core groups should obtain larger proportions of prestige goods.
c. Increased differences in degree of sedentism should be evident.
d. Increased differences in degree of social complexity should be evident.

Marginal Periphery

Indigenous societies in the marginal periphery engage in regular and direct interaction with agents of the world-economy. Availability of preciosities increases further, and externally derived bulk goods now become widely available, often through direct exchange. These factors are expected to lead to greater breadth and depth. Other types of interaction may also become more prevalent, including movement of people and ideas. The degree of internal differentiation may increase because of the presence of exchanged bulk goods and preciosities at specific locations. The location of core societies may change, as some locations have differential access to exchanged bulk goods that represent a new and major subsistence resource.

With the arrival of whalers in 1889, Herschel Island became the site of direct and sustained contact between Inuvialuit and overwintering Euroamerican whalers (Bockstoce 1986). Environmental factors, such as the presence of large bowhead whale populations and the fact that Pauline Cove offers the best winter harbor in the region, combined with cultural factors such as the fact that fashion trends in the core produced a high price for baleen corset stays, led to sudden intense use of Herschel Island by agents of the European world-economy. The process of incorporation was accelerated, and Herschel Island was rapidly drawn into the marginal periphery of the European world-economy.

At this time many new mechanisms of incorporation were initiated, including direct exchange, intermarriage, missionization, and Canadian law. The process of change was further amplified by frequent epidemics. For purposes of this book, the following predictions largely disregard the effects of these factors, and Euroamerican settlements are assumed to play the role of a spatially

limited but dense source of potential subsistence resources and preciosities. Furthermore, during this period, Euroamericans, particularly whalers, may have become in essence the equivalent of another regional group (or groups) that spatially overlap Inuvialuit regional groups. As such, the Qikiqtaryungmiut world-system, while continuing to exist in a rapidly changing version of its original form, also now included interactions with this new and quite different social entity. The validity of these assumptions, and their impacts on the application of the world-system model, will be considered further in later chapters.

*7. **Marginal Periphery Expectations—Breadth.*** World-system breadth should increase.

a. Trade goods should originate in a greater number of regions.
b. Aggregation sites containing evidence of occupation by more than one group should increase in number or density of occupation.
c. Boundary maintenance should decrease, as indicated by a reduction in stylistic differences for artifacts that convey social meaning.

*8. **Marginal Periphery Expectations—Depth.*** World-system depth should increase.

a. Trade goods should occur in higher frequencies.
b. Trade goods should occur in a greater number of functional categories.
c. Trade goods should replace a greater number of categories of material culture.
d. The proportion of bulk goods to preciosities should increase.
e. Subsistence-settlement systems should change further to articulate better with the world-economy. Sources of newly available resources in the form of Euroamerican goods should become central to settlement patterns.
f. More effort should be made to obtain commodities for export, as evident in increased numbers of bones of fur-bearing species and species that yielded meat for trade.
g. Conflict should be reduced further.

*9. **Marginal Periphery Expectations—Internal Differentiation.*** Herschel Island should become a core region because of the spatially restricted presence of large quantities of bulk goods and preciosities at Pauline Cove.

a. Qikiqtaryungmiut population density should rise relative to other groups.

b. Qikiqtaryungmiut should obtain a higher proportion of preciosities than other groups.
c. Qikiqtaryungmiut should become more sedentary relative to other groups.
d. Qikiqtaryungmiut should show indications of a greater degree of social complexity than other groups.

Summary

To close this chapter, it is important to reemphasize the fact that this suite of expectations represents an attempt to pull together several disparate sources of information that can be used to understand regional patterns of interaction. These include (1) the general framework for understanding hunter-gatherer world-systems, as outlined in Chapter 3; (2) the framework of culture history in the region, as seen in the archaeology, ethnohistory, and ethnography of the Mackenzie Delta region and neighboring areas; and (3) the quasi-direct historical analogue provided by North Alaskan Iñupiat patterns of interregional interaction. As a general rule, although many aspects of Inuvialuit culture history are understood at a local or regional level, the networks within which these regional groups interacted are not well understood. By delineating these expectations and then evaluating them, I ultimately hope to be able to produce a concrete understanding of the highest level of interaction (the world-system). In subsequent chapters, these expectations will be evaluated primarily on the basis of archaeological evidence for change in interaction networks over time as manifested on Herschel Island in the northern Yukon. Where possible, additional information from archaeological sites in other locations, as well as the ethnohistoric record, will also be considered.

6

The Qikiqtaruk Archaeology Project

EXCAVATIONS ON HERSCHEL ISLAND

TO APPLY WORLD-SYSTEM THEORY to the archaeological record of the Mackenzie Delta region, previously published archaeological and ethnohistoric sources, as reviewed in Chapter 4, can be used to evaluate some of the expectations outlined in Chapter 5. However, a significant gap in the culture history of the Mackenzie Delta region still exists because of the lack of an archaeological sequence from a single locality that spans the late precontact to early contact periods. Such a sequence is required in order to apply a "group-centric" approach to hunter-gatherer world-systems—that is, to evaluate changes in the world-system as seen from the perspective of a specific regional group. Before the present research, collections from McGhee's (1974) excavations at Kitigaaryuit represented the most detailed archaeological sequence from the Mackenzie Delta region; however, the samples obtained from later parts of the Kitigaaryuit sequence are small, mixed, or both. Most other excavated sites contain only single components.

As a result of this circumstance, a three-year program of fieldwork (the Qikiqtaruk Archaeology Project) was initiated on Herschel Island to obtain a fine-grained archaeological sequence from a single site, particularly for more recent periods. Herschel Island was considered appropriate for two reasons. First, the known culture history of Herschel Island suggested that it should contain traces of settlement from the full Inuvialuit period, from early Thule to the twentieth century, thus potentially yielding a sequence useful for the present research. Earlier archaeological fieldwork on Herschel Island, although limited in many ways, reinforced the likelihood that a high-resolution record remained there (Bockstoce 1991, n.d.; Friesen and Hunston 1994; Hunston n.d.; Yorga 1978, 1980). Second, the position of Herschel Island in relation to the encroaching European world-economy can be reconstructed with a high degree of certainty for a number of different periods using the high-quality documentary record. This chapter begins with an overview of the field project

as a whole, followed by a brief description of the five relatively well-dated and undisturbed archaeological components that provide the raw data used to evaluate the expectations just presented.

The overall research design required that an occupation sequence spanning the precontact to early contact periods be established. However, it quickly became apparent that most components were mixed, poorly stratified, or highly disturbed. Therefore, a chronological sequence could be established only through identification and excavation of a number of discrete components present in the remains of the many sod-covered dwellings at the site. Although an attempt was made to recover occupations dated to as great a time span as possible, it was considered particularly important to excavate samples from three periods: late precontact (ca. 1400–1800 AD), protocontact (ca. 1800–1889 AD), and early contact (ca. 1889–1907 AD), corresponding to the autonomous zone, contact periphery, and marginal periphery of the European world-economy, respectively. To obtain relatively complete samples, including small artifacts and faunal specimens, 3-mm ($^1/_8$-inch) screens were used for all levels of all features excavated, with the exception of highly disturbed deposits in two of the features, which were not included in this study. Architectural details were recorded in order to understand change in dwelling form through time. Where possible, houses were excavated in natural layers on the assumption that discrete occupations would be recoverable within these units. Most houses were excavated in four natural levels: surface sod, house fill, floor, and under floor.

Fifteen features at the Pauline Cove (NjVi-3) and adjacent Washout (NjVi-2) sites have been excavated by the present or previous archaeological projects. (See Table 4 and Figure 8.) However, only a few of these features are appropriate for the present analysis, due to four factors. First, some artifact samples were simply too small to allow an accurate assessment of the age or nature of the occupation. For example, Pauline Cove Feature 2, a well-preserved driftwood house, contained only twenty-four relatively undiagnostic artifacts below the surface level. Second, for some contact-period features, the ethnicity of the occupants could not be confirmed. Third, some previously excavated samples cannot be compared in a detailed manner to those produced during the present project. Because Yorga (1980) did not employ screens during his excavation of two houses at the Washout site, there is a high probability that small animal bones and artifacts were not collected. In addition, artifacts excavated by Bockstoce (n.d.) were destroyed in a fire before complete analysis.

Fourth, the most general problem was that of mixed or disturbed deposits. The past century has seen intensive use of Pauline Cove by both Inuvialuit and Euroamericans. Each new group destroyed or altered evidence of previous occupations through activities such as construction of houses on top of earlier

Table 4. Summary of Excavated Components from Pauline Cove and Washout

Feature Number[1]	Period			Excavator, Year of Excavation (References)[2]	Comments
	Pre-contact	Proto-contact	Early contact		
Pauline Cove F1		**X**		Friesen, 1990 (1, 2, 3)	
Pauline Cove F2	X			Friesen, 1990 (1)	Small sample
Pauline Cove F3	?		X	Friesen, 1991 (4, 5)	Anglican mission midden
Pauline Cove F4	?		X	Bockstoce, 1973 (4, 6, 7)	Artifacts destroyed in fire
Pauline Cove F5	X	X	**X**	Friesen, 1991 (4)	Subsurface levels disturbed
Pauline Cove F6			X	Friesen, 1992 (3, 8)	Postdates whaling period
Pauline Cove F7	**X**		X	Friesen, 1992 (3, 8)	Upper levels disturbed
Pauline Cove F8			**X**	Friesen, 1992 (3, 8)	
Pauline Cove F9	X		?	Friesen, 1992 (8)	Small mixed samples
Pauline Cove F10		?		Bockstoce, 1973 (6, 7)	Artifacts destroyed in fire
Pauline Cove F11			X	Hunston, 1986–1987 (9)	Ethnicity uncertain
Washout F1	X			Yorga, 1977–1978 (10, 11)	Contents not screened
Washout F2	X			Yorga, 1977–1978 (10, 11)	Contents not screened
Washout F3	**X**			Hunston, 1985–1986 (12)	
Washout F4	X			Hunston, 1985–1986 (12)	Small sample

Table by author.

1. Bold text indicates components emphasized in the present research.

2. References: 1 (Friesen 1991); 2 (Friesen 1992a); 3 (Friesen 1994); 4 (Friesen 1992b); 5 (Saxberg 1993); 6 (Bockstoce 1991); 7 (Bockstoce n.d.); 8 (Friesen 1993); 9 (Hunston pers. comm.); 10 (Yorga 1978); 11 (Yorga 1980); 12 (Friesen and Hunston 1994).

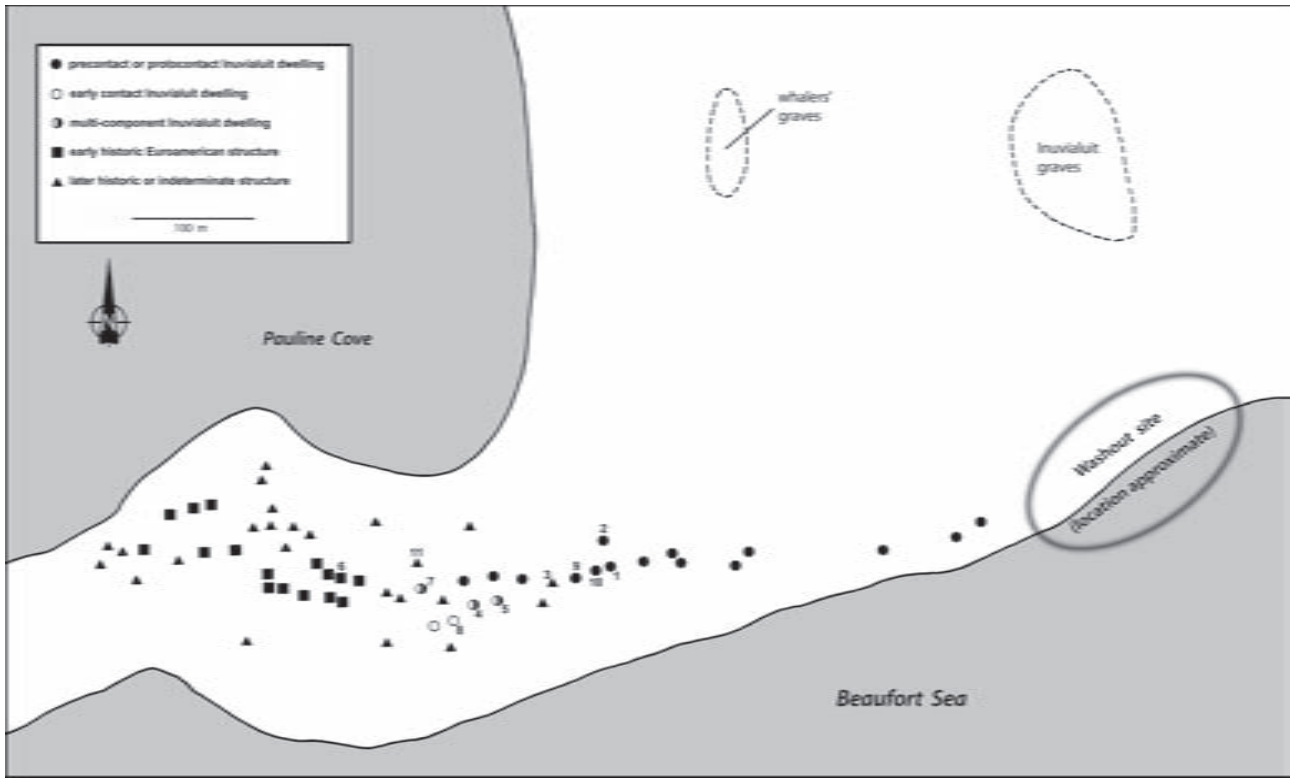

FIGURE 8. Map of the Pauline Cove and Washout sites, Herschel Island. (Illustration by author.)

occupations, excavation of garbage or storage pits, amateur excavation to obtain artifacts, and tethering of dogs on earlier houses. These actions regularly destroyed artifacts, moved older artifacts into more recent levels, and provided the potential for deposition of recent artifacts into earlier assemblages. A number of houses were test excavated and determined to be too mixed for continued excavation. Others appeared to be almost completely sterile, possibly as a result of amateur excavation.

A total of five features yielded excavated samples that were sufficiently large and undisturbed for use here. In this chapter, these features will be described, together with brief overviews of their artifacts, faunal samples, and chronological positions. Further description of these data categories will be provided in later chapters as necessary to evaluate the expectations for changing world-systems outlined previously. Additional descriptions of aspects of the fieldwork are available in three site reports (Friesen 1991, 1992b, 1993; see also Friesen 2009b; Friesen and Hunston 1994). As a general note, artifact identifications are presented in functional categories widely used in the literature for the North American Arctic, relating to sea mammal hunting, transportation, women's activities, and so on. In many cases, these categories are more readily applied to "traditional" Inuvialuit artifacts than they are to Euroamerican trade goods; however, an attempt has been made to apply this same scheme consistently to both traditional and traded objects. In most cases, artifact identifications are based on comparison with a number of published ethnographic and archaeological sources (Ford 1959; Giddings 1952; Giddings and Anderson 1986; Holtved 1944; Mathiassen 1927, 1930; McCartney 1977; McCullough 1989; McGhee 1974; Morrison 1983, 1988, 1990a; Murdoch 1892; Stanford 1976; VanStone 1970; Yorga 1980).

Artifacts, Technounits, and Faunal Remains

Because this study is centered on the identification and interpretation of past interaction, exchanged goods are particularly important, as they are the most unequivocal indicator of connections between regions and regional groups. To establish the proportion of trade goods within the total artifact samples, simple artifact frequencies are not sufficient, because in some cases composite artifacts are made of both imported and local components, making the entire artifact unclassifiable as exchanged *or* local. For example, three of the trade goods in Pauline Cove Feature 7 are components of composite implements: a copper rivet in an antler knife handle, a copper graver bit in a wooden handle, and a copper hook in an ivory fish hook shank.

To compensate for this presence of traded materials in composite artifacts, Oswalt's (1976, 1987) concept of the "technounit" will be employed in all the artifact descriptions that follow. A technounit is "a physically distinct and unique part that is integrated into and contributes to the form of a finished artifact" (Oswalt 1987:93). Artifacts vary in complexity from those containing a single technounit, such as an ivory labret (lip plug), to those containing many, such as a tailored skin jacket, which could have thirty or more technounits (95–96). Oswalt (1976) developed the technounit concept to determine differences in the overall technological complexity between different societies, not for elucidating patterns of interaction. However, the concept is useful in the present context because explicit rules have been developed for the analysis and comparison of different artifact classes. A major difference in the use of the technounit concept is that Oswalt (1976) quantified the number of unique technounit *types*, counting multiple occurrences of a type only once, whereas the present study quantifies the total number of technounits, including repeated occurrences of a given technounit type. Furthermore, in the present study, unidentified artifacts and debitage fragments are included in the total number of technounits. All artifact tables are divided into technounits made from imported materials and technounits made from locally available materials.

In this chapter, faunal remains are presented in tabular form, followed by an extremely brief summary of important patterns; further discussion of faunal frequencies will be covered in later chapters where relevant. All faunal specimens that have been modified for use as artifacts have been excluded from the tables. Additionally, unmodified baleen fragments are not included as faunal remains, as they likely represent raw material for artifact production. Lemming and vole bones are listed in the tables but are not included in calculated taxonomic frequencies because they are almost certainly intrusive. Taxonomic frequencies are presented as Number of Identified Specimens (NISP) and Minimum Number of Individuals (MNI). MNI was calculated taking into account element, element portion, and size, as well as sex and age where relevant. Unless otherwise stated, discussion of faunal frequencies is based on NISP, not MNI.

The Autonomous Zone/Late Precontact Period

Washout Feature 3

The autonomous zone is represented by two features: Feature 3 at the Washout site and Feature 7 at Pauline Cove. Although these two sites have been

given different names and site designations, they are in fact contiguous and can be considered to be a single settlement spanning most of the second millennium AD. As discussed previously, although a number of additional features contained late precontact materials, they are not appropriate for analysis here either because they are too mixed or because their artifact samples are too small to allow definitive chronological determination.

The Washout site[1] was named for the fact that it has been actively eroding into the Beaufort Sea for over fifty years (MacNeish 1956a:50). This condition led to Yorga's (1978, 1980) excavations in 1977 and 1978, undertaken to salvage two threatened houses. Renewed archaeological survey performed by Hunston in 1985 revealed vertical posts protruding from the beach in the vicinity of Yorga's earlier excavations (Friesen and Hunston 1994; Hunston 1986). Fieldwork goals were adjusted to allow for salvage of the site, and initial testing yielded cultural remains associated with a precontact Inuvialuit house floor. Excavations proceeded during 1985 and 1986 under adverse conditions resulting from the fact that during high tide the Feature 3 floor was submerged under as much as 30 cm of water. A series of retaining walls was built, none of which was able to fully withstand the Beaufort Sea. Despite these difficulties, all cultural deposits were screened through 3-mm mesh for maximum recovery of small artifacts and faunal specimens, and therefore the excavated assemblage can be compared to the other assemblages described here, which were collected using the same methodology.

Although the Beaufort Sea had carried away a portion of Feature 3 before excavation, it is recognizable as a semisubterranean winter house. (See Figure 9.) The mapped portion of this house represents most of the primary structure, although the front wall and presumably an entrance tunnel have disappeared. The house faced southeast, with the rear wall visible as a row of upright posts. Floor logs were oriented perpendicular to the long axis of the house, and an area of more numerous smaller logs at the rear indicates the position of a sleeping platform.

Aside from the logs that form the rear wall, only six upright posts remain: four on the western margin and two on the eastern margin of the house. These uprights must have served as either wall members or roof supports. Finally, three large horizontal logs were recorded outside of the main structure. These were probably used to buttress the sod walls after their construction. The incomplete nature of the architectural remains does not allow further description of this house, and the number and orientation of alcoves remains unclear. The possibility of an alcove on the west side is suggested by a poorly defined raised gravel area.

FIGURE 9. Washout Feature 3, plan view. (Illustration by author, after figure 4 in Friesen and Hunston 1994.)

Chronology. One radiocarbon date was obtained from Washout Feature 3. A worked antler tine yielded a date of 330 ± 70 BP (Beta-64368), or 1490–1640 cal AD at 1 sigma, with a higher probability in the period between 1490 and 1600. Thus, this feature probably falls fairly early in the post-Thule late precontact period, with a sixteenth-century occupation most likely. This assay is consistent with chronologically diagnostic artifacts recovered from this feature.

Harpoon heads, generally considered the most diagnostic of Arctic implements, are represented by two formal types in Feature 3 plus an undiagnostic baleen darting harpoon head. First, Nuwuk harpoon heads are common throughout the western Arctic in recent periods and as such are not chronologically diagnostic. In the Mackenzie Delta region, they are the most commonly occurring forms at Kugaluk (Morrison 1988), Iglulualuit (Morrison 1990a), Langton Bay (Morrison 1990a), Okat (Morrison 1990a), upper levels of Kitigaaryuit (McGhee 1974:45), Point Atkinson (Mathiassen 1930:8), and

Barter Island (Mathiassen 1930:21). These sites range from the late precontact to protocontact period between about 1600 AD (Morrison 1990a:107) and 1860 (Morrison 1988:91). Nuwuk harpoon heads are present—but form a smaller proportion of the sample—in some earlier Thule contexts such as Booth Island (Morrison 1990a) and Washout Feature 2, where one was identified as a Barrow-type harpoon head (Yorga 1980).

Nunagiak harpoon heads, on the other hand, are more restricted in their distribution. This type is the most common form from Yorga's (1980) Washout Feature 2, which has not been directly dated. Other examples have been recovered from level M3 at Kitigaaryuit, dated to 340 ± 20 BP (1440–1660 cal AD at 1 sigma; McGhee 1974:85); Barter Island (Mathiassen 1930:21); and a surface context at Iglulualuit (Morrison 1990a:43). On the basis of these occurrences, and the temporal distribution of this type in northwestern Alaska (Ford 1959:87), Nunagiak can be considered a late precontact type that did not survive into the contact period.

Arrowhead tang forms are another commonly used chronological indicator. The only preserved tang from Feature 3, however, is of the symmetrically spurred form that has been recovered from virtually every late precontact and early contact site in the region. Other artifacts recovered from this feature provide general confirmation of the late precontact nature of the sample. For example, the conical ivory pendant is similar to two from Intermediate Kotzebue contexts on the Kobuk river, which date to approximately 1550 AD (Giddings 1952:88). The labret from Washout Feature 3 is also similar to specimens from the Intermediate Kotzebue period on the Kobuk River (Giddings 1952:88).

Artifacts. Washout Feature 3 yielded a total of 247 technounits. (See Table 5.) Three imported ivory technounits will be described here in their respective functional categories. Sea mammal hunting is represented by thirty artifacts, including six harpoon heads. Three Nuwuk and two Nunagiak barbed harpoon heads are made of antler, and a bilaterally barbed darting harpoon head is made of baleen. As is often the case with baleen implements, it is unclear whether this specimen was intended as a toy or as a functional implement (cf. Mathiassen 1927:80; Yorga 1980:72). Four harpoon endblades include two of bone (one with a rivet hole) and two of slate. Additional harpoon gear includes one socket piece, two probable foreshaft fragments, and three ice picks that could have been used either in ice hunting or ice fishing. Hunting seals at breathing holes may also be indicated by nine snow probe parts. Finally, the use of sealskin floats is indicated by an ivory inflation nozzle, a darting harpoon float nozzle, and an antler plug probably used to secure a sealskin float nozzle. Land hunting is represented by three artifacts related to bow-and-arrow use.

Table 5. Technounit Frequencies, Washout Feature 3

Imported Technounits	*n*
Float nozzle, ivory	1
Pendant, ivory	1
Unidentified, ivory	1
Locally Procured Technounits	*n*
Sea Hunting	
Harpoon head, Nunagiak	2
Harpoon head, Nuwuk	3
Harpoon head blank	3
Darting harpoon head	1
Harpoon end blade	4
Harpoon foreshaft	2
Harpoon socket piece	1
Harpoon ice pick	2
Bladder dart nozzle	1
Toggle	1
Snow probe section	6
Snow probe tip	3
Land Hunting	
Arrowhead, spurred tang	1
Arrowhead, distal fragment	1
Feather setter	1
Fishing	
Fishing ice pick	1
Men's Tools	
Knife endblade, Type 5	3
Knife endblade, Type 6	1
Knife endblade, Type 7	5
Knife endblade, model?	1
Fox mandible graver	4
Tooth engraving bit	2
Beaver incisor bit	3
Hand drill, chert	1
Adze head, whalebone	1
Adze handle, wood	1
Bow drill mouthpiece, astragalus	1
Drill bit, chert	1
Gauged drill	1
Abrader/whetstone	4
Mattock head, whalebone	1
Mattock head blank, whalebone	1

(continued)

Table 5. *Continued*

Locally Procured Technounits	*n*
Women's Tools	
Scraper, slate	1
Scraper, cobble spall	4
Ulu blade	8
Needle	3
Thimble holder	1
Awl	4
Rectangular stone slab	3
Ceramic fragment	4
Scapula tool	2
Ornaments	
Labret	1
Comb	1
Pendant, shell	1
Pendant, tooth	4
Social Activities	
Bone dagger	1
Drum rim fragment	2
Model knife	1
Unidentified or Debitage	
Antler	16
Baleen	6
Bone	18
Tooth	3
Whalebone	3
Wood	9
Birchbark	1
Skin	7
Slate	60
Chert	8
Stone	8
TOTAL	247

Table by author; includes data from Friesen and Hunston (1994:tables 1–5).

The single complete arrowhead exhibits an incised ownership mark and a symmetrically spurred tang. A second antler arrowhead is represented by a tip section. The third related artifact is identified as a feather setter (Murdoch 1892:294). Fishing is represented by only a single artifact—an ice pick that was likely used for ice fishing.

Thirty-one implements relating to activities primarily associated with men were recovered from Feature 3. Ten ground slate knife endblades were identi-

fied, including both single- and double-edged types; however, many more are probably represented among the many unidentified ground slate fragments. Five isolated teeth, including three from beaver, as well as four fox mandibles with teeth were modified for use as engraving tools. Drilling is indicated by a chert hand drill, a bone gauged drill, and a drill socket manufactured from a caribou astragalus. A whalebone adze head was recovered from Feature 3, as was a complete wooden handle for either an adze or a mattock. One mattock blade and one mattock blade blank were also recovered. Four whetstones were all manufactured on amorphous sandstone cobbles.

Thirty tools indicate a broad range of activities related to food preparation and clothing manufacture, usually performed by Inuvialuit women. Eight complete and fragmentary ground slate ulu blades were recovered, with both tanged and tapered forms present. Two modified caribou scapulae may have been used as meat-cutting implements (LeMoine 1991:126). Four small pottery fragments were recovered, none of which exhibits any decoration or other diagnostic features. Two rectangular stone slabs with flaked margins are also present in the collection. Although Yorga (1980:107) referred to several examples of this technological class as scrapers, it seems more likely that they were in fact used in food preparation, as indicated by encrusted burnt fat (Friesen 1992b). Skin working is represented by four cobble spall scrapers, all of which retain cortex on their dorsal surfaces. In addition, one aberrant ground slate implement is tentatively identified as a scraper. Tailoring is represented by eight artifacts. Three bone needle fragments were identified; none retains its eye. Four awls are made on a range of bone elements, and finally, half of a finely crafted toggle-shaped thimble holder was recovered. A series of incised dots decorates each face of this implement.

Eight specimens served ornamental functions. A baleen comb is decorated with a single, ticked line on each face and a deep v-shaped cleft in the handle. A limestone labret is subrectangular in outline, with small flanges bordering a concave proximal surface. Of six pendants, four consist of modified caribou teeth: Two molars are grooved (not perforated) on their roots, one incisor has been perforated, and one canine has been partially perforated. One small white bivalve shell has been drilled, presumably for suspension. Finally, an ivory pendant is shaped in the form of a cone, with two holes at its proximal end, and with its distal end divided into four quadrants by grooves. It resembles a miniature version of a lobed blunt arrowhead.

Social activities are indicated by four artifacts, including two wooden drum rim fragments and a very small model of a ground slate double-edged knife, measuring only 1.8 cm in length, which may have been a toy or an amulet. A bone dagger is of a type used in interpersonal conflict (Stefansson 1919) and thus is included in the "social" category.

Faunal Remains. At the most general level of analysis, mammals dominate the faunal assemblage, comprising 73.6 percent of all specimens. (See Table 6.) When abundance is calculated for each taxon below the level of class, seals clearly dominate the sample, with ringed, harbor, and bearded seal together representing 88.6 percent of the identified mammal sample. The proportion represented by each of the three seal species cannot be determined with accuracy because many elements could not be identified to species or size class. Of the 622 seal bones that could be identified to a size class, 609 (97.9 percent) are small (ringed or harbor seal), and only 13 (2.1 percent) are derived from the larger bearded seals. Within the small seal category, only seven ringed seal and two harbor seal elements were identified. These nine elements are insufficient to allow accurate determination of the actual proportions of the two species, although it is reasonable to assume that ringed seals significantly outnumber harbor seals. Other mammals are present in very low frequencies.

Fish make a significant secondary contribution, at 25.5 percent of the total sample; the large number of fish bones stands in contrast to the very low frequency of fishing equipment recovered from this feature. Most of the fish bones are from whitefish and cisco, which generally are taken with a net from summer through early winter (Morrison 2000b). The fish remains may represent cached food obtained during summer or fall runs, or they may represent active winter fishing through the ice.

The very small bird sample, consisting of only twenty specimens and less than 1 percent of the entire sample, contains a range of both migratory waterfowl taxa and others such as gulls and shore birds.

Pauline Cove Feature 7

Before its excavation in 1992, Feature 7 was visible as a relatively large house mound located about 100 m east of the historical whaler settlement (Friesen 1993, 1994).[2] Initial test excavations revealed a disturbed deposit containing both contact and precontact artifacts. These upper levels are too mixed for use in the present research. Expanded excavations, however, allowed the delineation of an intrusive pit in the middle of the house, which probably resulted from earlier excavation of the site for an unknown purpose. Underneath this pit was an undisturbed precontact deposit that includes the remains of a sod house. For purposes of the present research, only the artifacts associated with the lower excavation levels 3 and 4 will be described.

Feature 7 contains two definite alcoves, one at the rear and one on the left (west) side (house terminology assumes the reader is standing in the entrance tunnel facing the house). (See Figures 10 and 11.) The right side of the house, although difficult to interpret, appeared not to exhibit a similar alcove.

Table 6. Vertebrate Frequencies, Washout Feature 3

	NISP	NISP % Class	MNI	MNI % Class
Mammals				
Arctic ground squirrel	17	1.7	4	9.3
Brown lemming[1]	*8*			
Brown/collared lemming	*6*			
Lemming/vole	*18*			
Bowhead whale	1	0.1	1	2.3
Whale spp.	4	0.4		
Dog	5	0.5	1	2.3
Dog/wolf	1	0.1		
Dog/red fox	1	0.1		
Arctic fox	57	5.8	6	14.0
Red fox	2	0.2	1	2.3
Arctic/red fox	8	0.8		
Polar bear	7	0.7	2	4.7
Grizzly/polar bear	2	0.2		
Wolverine	1	0.1	1	2.3
Bearded seal	13	1.3	2	4.7
Ringed seal	7	0.7	2	4.7
Harbor seal	2	0.2	1	2.3
Ringed/harbor seal	600	60.7	19	44.2
Seal spp.	254	25.7		
Caribou	5	0.5	2	4.7
Dall's sheep	2	0.2	1	2.3
Unidentified mammal	674			
Total Mammal	**1663**	**73.6**	**43**	**71.7**
Birds				
Arctic loon	1	7.7	1	12.5
Common/yellow-billed loon	1	7.7	1	12.5
White-winged scoter	1	7.7	1	12.5
Eider/white-winged scoter	1	7.7		
Duck cf. long-tailed	3	23.1	1	12.5
Duck spp.	1	7.7		
Shore bird	3	23.1	2	25.0
Jaeger/gull	1	7.7	1	12.5
Arctic tern	1	7.7	1	12.5
Unidentified bird	7			
Total Bird	**20**	**0.9**	**8**	**13.3**
Fish				
Whitefish/cisco	96	93.2	8	88.9
Whitefish/grayling	1	1.0		
Whitefish/cisco/round whitefish	4	3.9		
Burbot	2	1.9	1	11.1
Unidentified fish	474			
Total Fish	**577**	**25.5**	**9**	**15.0**
TOTAL	**2260**		**60**	

Table by author; a preliminary version was presented in Friesen and Hunston (1994).

1. Italicized taxa are assumed to be intrusive, and are not included in NISP or MNI calculations.

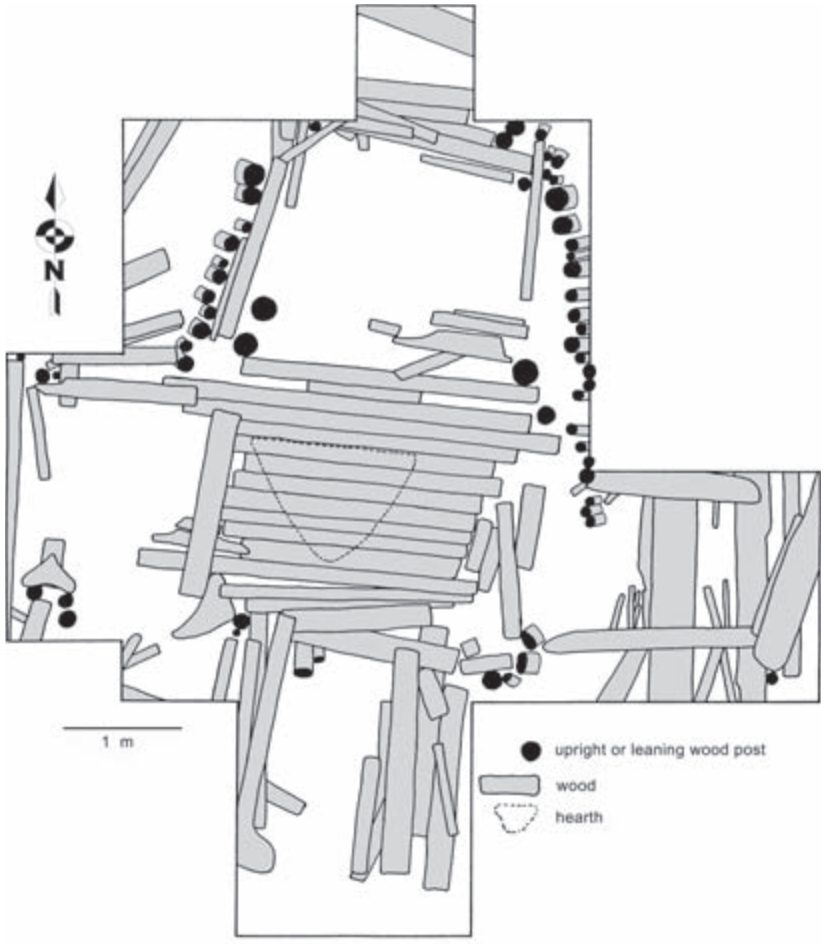

FIGURE 10. Pauline Cove Feature 7, plan view. (Illustration by author, after figure 2 in Friesen 1994.)

A short, deep entrance tunnel leads to the main floor area, which measures approximately 3×3.5 m. The rear alcove and the left-side alcove measure 3.5×2.5 and 2.5×2 m, respectively. The four corners of the central floor area contain the remains of roof support posts; in each case a stout post is grouped with one or more smaller posts. These smaller posts may have been added to reinforce the primary corner post at some time after the original construction of the house. The floor consists of driftwood logs, averaging approximately 15 cm in diameter, which run perpendicular to the main axis of the house. A triangular burnt area in its center indicates the probable position of a hearth.

FIGURE 11. Pauline Cove Feature 7, photo looking north with entrance tunnel in foreground. (Photo by the author; reprinted with permission from T. Max Friesen, *Qikiqtaruk: Inuvialuit Archaeology on Herschel Island* [Whitehorse: Heritage Branch, Government of Yukon], 1998.)

The rear and left alcoves are defined by large horizontally placed logs at their rear and side margins, and in the case of the side alcove, a single log defines the front. Uprights occur in both exterior corners of these two alcoves. The nature of the right side of the feature is problematic; it could conceivably represent a third alcove, as suggested by horizontal logs and a few artifacts at floor level. However, the side wall appears to extend across the inside of the possible alcove. Therefore, it is most likely that the observed logs result from wall fall, buttressing logs, or possibly a collapsed rack or ancillary feature rather than a third alcove. Excavation of the matrix within the rear and left alcoves revealed numerous small sticks and short logs that likely served as supports for sleeping platforms composed of insulating vegetation and skins. These sleeping platforms were raised 10 to 15 cm above floor level.

Two relatively intact wall sections are preserved on either side of the rear alcove. Wall logs, which were angled inward, averaged approximately 11 cm in diameter. Relatively few logs were identified as roof fall during excavation. However, on the basis of observations by Richardson (1828) and Petitot (Savoie 1970), the walls are assumed to have sloped inward to a flat, square roof that was supported on the four corner posts. In those areas where excavation

extended beyond the feature walls, large horizontal logs were encountered. These logs likely served to buttress sod insulation and inner house walls.

Chronology. A total of five radiocarbon dates have been obtained on worked caribou bone or antler objects from Feature 7. (See Table 7.) Beta-64367 was "modern," which is clearly too recent given the artifactual contents of the house. TO-4613, on the other hand, appears "too old" in relation to the other three dates and considering the lack of typologically early artifacts. The remaining three dates all result in multiple intercepts of the calibration curve and, when unrealistic twentieth-century portions of their calibrated ranges are excluded, indicate an age between 1650 and the nineteenth century cal AD. Given the complete lack of diagnostic nineteenth-century trade goods, any date after about 1850 is improbable, and the most likely interpretation is that the two very similar dates (TO-4612 and TO-4614) are correct. The highest probability calibration curve intercepts for both of these dates cover the period of approximately 1730–1810 cal AD; this is interpreted here as the most likely age range for the occupation of Feature 7.

Feature 7 yielded relatively few artifact categories capable of giving precise chronological information. Two harpoon-head types are represented by functional specimens, Nuwuk and Kotzebue Type 1. As already mentioned, Nuwuk harpoon heads have a very broad temporal distribution and are therefore

Table 7. Radiocarbon Dates from Pauline Cove Feature 7

Lab Code	Radiocarbon Age BP	Cal AD (1 sigma)	Probability
Beta-64366	90 ± 60	1691–1729	0.254
		1811–1920	0.736
		1952–1954	0.010
Beta-64367	Modern	N/A[1]	N/A
TO-4612	200 ± 50	1650–1684	0.263
		1733–1806	0.564
		1929–1951	0.173
TO-4613	400 ± 50	1440–1518	0.788
		1594–1618	0.212
TO-4614	210 ± 50	1646–1683	0.303
		1735–1805	0.547
		1932–1951	0.149

Table by author.
1. N/A = not applicable.

of little use here. However, Kotzebue Type 1 specimens have a more restricted distribution in time and space. On Herschel Island, a Kotzebue Type 1 harpoon head (also referred to as Kilimatavik type) is present in Washout Feature 2 (Yorga 1980). Other specimens of this form are known from the late precontact House 11 at the Iglulualuit site, east of the Mackenzie Delta (Morrison 1990a); the Intermediate Kotzebue period on the lower Kobuk river, dated to around 1550 AD (Giddings 1952); the late precontact Kotzebue period at Cape Krusenstern (Giddings and Anderson 1986); and late precontact contexts in the vicinity of Point Barrow (Ford 1959). A third possible type may be represented by an aberrant model harpoon head. This specimen is most like one from Kugaluk, an early contact site east of the Mackenzie Delta dated to approximately 1860 AD (Morrison 1988:91); however, the similarity may be fortuitous.

These harpoon head types indicate a general late precontact date for Feature 7. Other artifact types do not provide more accurate chronological information. For example, no arrowhead retains its tang, and the one labret type, known as "hat-shaped," is generally distributed throughout the late precontact period in northwestern Alaska (Ford 1959; Giddings 1952). On the basis of the late precontact typological information, combined with a scarcity of Euroamerican or Eurasian artifacts that are represented by only a single iron fragment, a date in the eighteenth century seems most likely, although the first half of the nineteenth century cannot be completely ruled out. The occupation of Pauline Cove Feature 7 is almost certainly more recent than that of Washout Feature 3, according to the radiocarbon dates, typological information, and the fact that the Washout site is generally earlier than Pauline Cove. Quite possibly, Pauline Cove was occupied only after Washout was abandoned.

Artifacts. Imported technounits include eighteen ivory artifacts or debitage fragments, three copper artifacts, one iron graver tip, and one soapstone lamp fragment. These will be described within their relevant functional categories. (See Table 8 and Figure 12.)

Five of the seven complete or fragmentary harpoon heads are classified as the Nuwuk closed-socket type (Ford 1959:93). One of these is complete and retains a bone endblade and rivet, a second is complete, and three are broken. The two additional harpoon heads are of Kotzebue Type 1 (Giddings 1952:53). It should be noted that although these two harpoon heads are typologically distinct, they are functionally similar: A Nuwuk harpoon head with endblade in place is similar in form to the self-bladed Kotzebue Type 1. In addition to the seven finished harpoon heads, one preform for a Nuwuk type is present. Five bone harpoon endblades, all with drilled holes for attachment to the harpoon head, and one ground slate endblade were also recovered. The only other

Table 8. Technounit Frequencies, Pauline Cove Feature 7

Imported Technounits	*n*
Harpoon foreshaft, ivory	1
Drag line handle, ivory	1
Inlaid eyes for drag line handle, ivory	2
Fish hook shank, ivory	3
Fish hook barb, copper	1
Knife handle rivet, copper	1
Graver bit, copper	1
Graver bit, iron	1
Thimble holder, ivory	1
Needle case plug, ivory	1
Lamp fragment, soapstone	1
Walrus carving, ivory	1
Unidentified, ivory	8
Locally Procured Technounits	*n*
Sea Hunting	
Harpoon head, Kotzebue 1	2
Harpoon head, Nuwuk	5
Harpoon head blank	1
Harpoon end blade	7
Harpoon head rivet	1
Harpoon foreshaft	2
Land Hunting	
Arrowhead, distal fragment	3
Arrowhead, bone	2
Arrowhead, blunt	3
Wrist guard	1
Fishing	
Fish hook barb, bone	2
Transportation	
Sled shoe	2
Men's Tools	
Knife handle	4
Knife endblade, Type 5	3
Knife endblade, Type 7	2
Composite knife handle	1
Graver handle	2
Fox mandible graver	2
Rodent mandible graver	1
Tooth engraving bit	1

(continued)

Table 8. *Continued*

Imported Technounits	*n*
Bow drill mouthpiece, astragalus	1
Drill socket piece	1
Gauged drill	2
Baleen shave	2
Wedge	1
Abrader/whetstone	1
Women's Tools	
Endscraper, chert	2
Scraper, cobble spall	1
Composite ulu handle half	2
Ulu blade	8
Needle	2
Awl	2
Lamp fragment, stone	1
Rectangular stone slab	12
Spoon	1
Bone tube	1
Scapula tool	1
Bucket bottom	2
Repair lashing, baleen	1
Bucket handle	1
Ornaments	
Labret	2
Pendant, tooth	3
Pendant, phalanx	1
Social Activities	
Gaming piece	2
Carving	1
Model harpoon head	3
Model kayak	1
Amulet box	2
Unidentified or Debitage	
Antler	34
Baleen	47
Bone	19
Mammoth tooth	1
Whalebone	18
Wood	34
Bark	2
Slate	22
TOTAL	**307**

Table by author.

FIGURE 12. Pauline Cove Feature 7, representative artifacts: *a*, *b*, Nuwuk harpoon heads; *c*, *d*, Kotzebue type 1 harpoon heads; *e*, aberrant harpoon head; *f*, *h*, bone harpoon endblades; *g*, slate harpoon endblade; *i*, *j*, harpoon foreshaft fragments; *k*, drag line handle or toggle; *l*, fish hook shank; *m*, fish hook shank with copper barb; *n*, fish hook barb; *o*, wrist guard; *p*, *q*, blunt arrowheads; *r*, antler arrowhead; *s*, bone arrowhead. (Photo by the author; reprinted with permission of the Canadian Archaeological Association, from figure 3 in T. Max Friesen, "The Qikiqtaruk Archaeology Project 1990–92: Preliminary Results of Archaeological Investigations on Herschel Island, Northern Yukon Territory," in *Bridges Across Time: The NOGAP Archaeology Project,* edited by Jean-Luc Pilon [Occasional Paper no. 2], 1994.)

implements that could confidently be associated with sea hunting were three broken foreshafts and an ivory drag line handle. This latter artifact is extremely finely made and is carved in the shape of a seal head with every detail represented, including whiskers above the eyes and mouth, and inlaid eyes.

Turning to land hunting, the three antler arrowheads are all fragmentary, and none retains a complete tang. Additionally, two fragmentary bone arrowheads were present. Murdoch's (1892:205) informants at Point Barrow told him that this type was made by Inuvialuit, and most archaeological sites in the greater Mackenzie Delta region have yielded examples. In addition, three blunt arrowheads, intended for bird hunting, were recovered. Finally, an antler wrist guard, used in archery, is finely decorated with a geometric design consisting of dots and lines.

Five artifacts related to fishing were recovered from Feature 7; all are complete or partial hooks. The one complete hook has an ivory shank with two proximal holes for attachment to a line, a series of seven incised dots down the dorsal surface, and a copper hook. Both of the other ivory fish hook shanks are broken; one has three lines of incised dots on its dorsal and side surfaces, and the other appears to be an unfinished preform. Finally, two pointed bone objects have been tentatively identified as barbs from composite fish hooks. Two sled shoes are the only transportation-related artifacts.

In terms of men's activities, of the five ground slate knife endblades, three are double-edged and two are single-edged. Two antler endblade knife handles are both finely worked. One has a very regular corrugated grip pattern on both edges, whereas the other has a series of twelve small holes along one edge, which were probably used to wind sinew through to serve as a grip. A third antler endblade knife handle is in two pieces that would have been bound together. It has an open endblade slot with a copper rivet in place. Drilling is represented by an astragalus drill mouthpiece, an antler drill socket piece, and two bone gauged drills. Engraving is represented by a wood graver with copper tip, a graver handle, a small iron implement that likely served as a graver bit, three mandible gravers, and one ground tooth that was probably used as a graver. Additional miscellaneous tasks were performed with a wedge and two probable baleen shave handles.

Implements usually associated with women's activities include eight complete or partial ground slate ulu blades, as well as a small antler side-slotted handle that probably held an ulu blade. Two soapstone lamp fragments were recovered, and one beach cobble covered in burnt sea mammal oil served either as a lamp stand or was itself a lamp, a possibility suggested by the presence of a natural hollow on its side. Twelve rectangular stone slabs are probably derived from composite stone pots or a cooking surface. Finally, four wood artifacts were placed in the household category: a spoon, two small trays, and a two-piece

handle that was not sufficiently complete to determine its exact use. Skin preparation is represented by a large cobble spall scraper and two chert endscrapers. Clothing manufacture is represented by two awls, two needles, an ivory needle case plug, and an ivory thimble holder. This last implement is very finely made.

Two hat-shaped labrets in the Feature 7 sample are virtually identical in form but made of different materials: stone and bone. In addition, four pendants were recovered. Three are drilled teeth and one is a drilled phalanx. Two amulet boxes and two carvings, one unidentified and one of a walrus, may have had ideological functions. Three model harpoon heads and one model boat may have functioned as toys or amulets, and two antler rectangles are provisionally identified as gaming pieces.

Faunal Remains. In Pauline Cove Feature 7, fish and mammal frequencies are almost precisely reversed from those at Washout Feature 3. Fish dominate numerically, contributing 69.3 percent of NISPs, while mammals contribute 29.9 percent and birds only 0.8 percent. (See Table 9.) Within the fish sample, whitefish and cisco are again present in by far the greatest numbers, indicating an emphasis on net fishing that could have taken place locally or, more likely, on one of the mainland rivers near Herschel Island, such as the Firth.

Within the mammal sample, seals constitute the most common taxon, contributing almost precisely half of NISPs (49.8 percent). No bearded seal bones were identified; rather, all seals were of the "small seal" (ringed or harbor) size class. As was the case at Washout, immature seals appear to make up a majority of the hunted population (4 of 6 MNI, or 66.7 percent). Fox and caribou are both relatively common in this sample, yielding 18.8 percent and 13.1 percent of the mammalian sample, respectively. In the case of caribou, this likely indicates a significant contribution to the diet, given the large body size of this taxon. Finally, beluga and bowhead whales are represented by sixteen and seventeen specimens, respectively. The place of whales in the local economy will be discussed further in Chapter 7. Within the bird sample, ptarmigan is the most common taxon, although the combined total of all waterfowl bones is higher.

The Contact Periphery/Protocontact Period

The protocontact period is represented by only one sample from an undisturbed context on Herschel Island (Friesen 1991, 1992a, 1994). This paucity of undisturbed protocontact samples is due to two primary factors. First, additional protocontact samples are present in a number of disturbed deposits in which the protocontact component cannot be differentiated from samples dating to

Table 9. Vertebrate Frequencies, Pauline Cove Feature 7

	NISP	NISP % Class	MNI	MNI % Class
Mammals				
Hoary marmot	1	0.2	1	3.4
Arctic ground squirrel	7	1.1	2	6.9
Muskrat	10	1.6	4	13.8
Small rodent spp.[1]	*10*			
Beluga whale	16	2.5	1	3.4
Bowhead whale	17	2.6	1	3.4
Wolf	1	0.2	1	3.4
Dog/wolf	44	6.9	2	6.9
Arctic fox	13	2.0	4	13.8
Red fox	1	0.2	1	3.4
Arctic/red fox	121	18.8	2	6.9
Grizzly/polar bear	7	1.1	2	6.9
Ringed/harbor seal	320	49.8	6	20.7
Caribou	84	13.1	2	6.9
Unidentified mammal	894			
Total Mammal	**1536**	**29.9**	**29**	**16.7**
Birds				
Red-throated/Pacific loon	4	14.8	2	20.0
Goose spp.	4	14.8	1	10.0
Long-tailed duck	4	14.8	1	10.0
Duck spp.	1	3.7		
Ptarmigan	7	25.9	2	20.0
Shore bird	1	3.7	1	10.0
Jaeger	2	7.4	1	10.0
Glaucous/herring gull	1	3.7	1	10.0
Jaeger/gull	1	3.7		
Snowy owl	1	3.7	1	10.0
Owl spp.	1	3.7		
Unidentified bird	12			
Total Bird	**39**	**0.8**	**10**	**5.7**
Fish				
Arctic char	1	0.1	1	0.7
Whitefish/cisco	256	23.7	125	92.6
Whitefish/cisco/round whitefish	402	37.2		
Inconnu	124	11.5	7	5.2
Coregoninae spp.	137	12.7		
Salmonidae spp.	149	13.8		
Burbot	7	0.6	2	1.5
Gadidae spp.	5	0.5		
Unidentified fish	2480			
Total Fish	**3561**	**69.3**	**135**	**77.6**
TOTAL	**5136**		**174**	

Table by author.

1. Italicized taxa are assumed to be intrusive, and are not included in NISP or MNI calculations.

other periods. Second, two well-preserved houses that apparently contained protocontact components were excavated by Bockstoce (1991:85–88) in 1973. However, the artifacts were destroyed in a fire. Feature 1, then, must stand as the single example for this period of occupation on Herschel Island.

Pauline Cove Feature 1

Feature 1, excavated during the 1990 field season, is a semisubterranean house containing one rear alcove and one side alcove on its left side. (See Figures 13 and 14.[3]) The dimensions of this house are almost identical to those of the late precontact Feature 7 described previously: The main floor area measures approximately 3×3 m, with the rear alcove 3.5×2.5 m and the side alcove 2.5×2 m. The four corners of the central floor area contain the remains of roof support posts. The northeast corner used a single stout post, whereas the other three corners were constructed from groups of two or more posts.

The floor was composed primarily of bare earth (sand-clay), with the exception of a square of split logs one meter square located against the east wall.

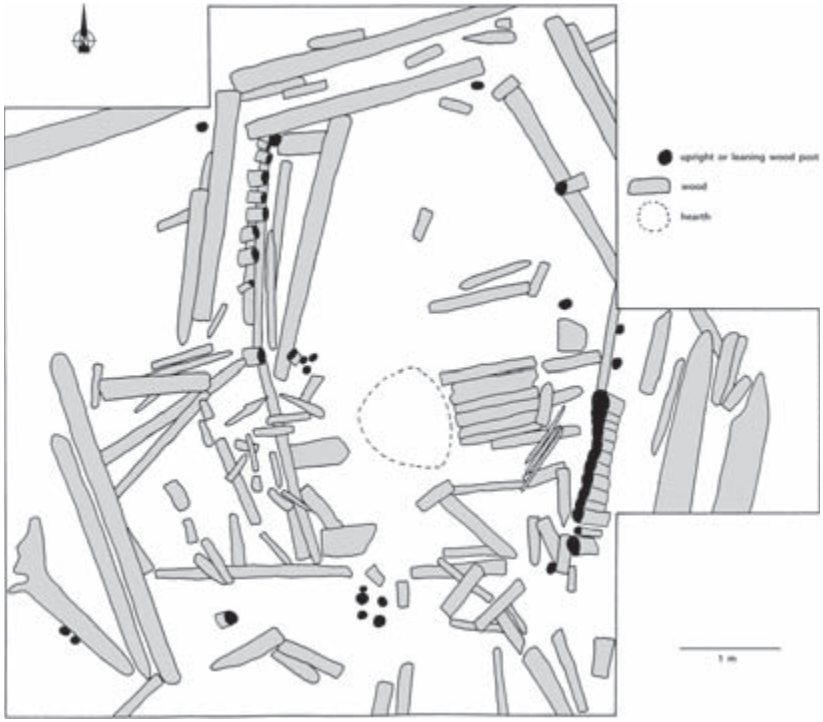

FIGURE 13. Pauline Cove Feature 1, plan view. (Illustration by author, after figure 4 in Friesen 1994.)

FIGURE 14. Pauline Cove Feature 1, photo looking north. (Photo by author.)

Perhaps this was a food preparation area, as suggested by many small bones and a layer of burnt sea mammal fat. In the center of the floor a circular burnt area, identified by charcoal and an oxidized orange color, was observed. This feature was sectioned and found to be a shallow pit with alternating lenses of burnt soil, charcoal, and sterile soil, and is interpreted as a hearth that was repeatedly cleaned of its contents, resulting in the observed stratigraphy. Bockstoce (n.d.) observed similar hearths in the two protocontact Inuvialuit houses that he excavated on Herschel Island.

The two alcoves in Feature 1 are defined by large horizontally placed logs at their rear and side margins, and the front of the side alcove is defined by a single log. These logs appear to have been held in place by the corner posts. Sleeping platforms were similar to those recorded in Feature 7 in that they were filled with small sticks and short logs and were raised 10 to 15 cm above floor level. Two areas of concentrated burnt sea mammal oil were observed, one at either end of the rear platform. These probably indicate lamp stands, which have been reported ethnographically as being located at platform corners (Savoie 1970:163). A third possible lamp stand is represented by a burnt flat plank at the south end of the side platform. The only lamp fragment recovered from the house was located near this last position.

The entrance passage of Feature 1 is poorly defined, a situation that is exacerbated by high water levels encountered late in the field season. This poor definition may result from decomposition of structural logs or collapse of the tunnel. However, it may also result from the use of a snow-block tunnel that simply melted in the spring. This arrangement was reported by Petitot (Savoie 1970:160) for Inuvialuit winter dwellings on the Anderson River, east of the Mackenzie Delta. However, Feature 1 did contain a significant cold-trap entrance, as the deepest excavated portion of the tunnel was over 50 cm below floor level.

The basal portions of the west wall of the rear alcove and the east wall of the main floor area have survived. As with Feature 7, walls were formed of closely spaced driftwood logs angled toward the central floor area and were buttressed by large logs toward the exterior of the house. The relative absence of wall logs, and the complete absence of roof fall despite excellent preservation, deserves comment, particularly in light of the fact that the many older houses at Pauline Cove are much more complete. This relative incompleteness probably results from scavenging of house timbers by later occupants of Herschel Island. Although this could have been accomplished by later Inuvialuit, it was more likely a result of whalers' activities in the 1890s. Over a very short time, the whalers' ships and buildings on Herschel Island used enormous quantities of firewood for heating, denuding the normally abundant driftwood on the shores of Pauline Cove to the point where ships' crews were forced to travel many kilometers to obtain firewood (Bockstoce 1977). Under such conditions, it seems probable that recently abandoned Inuvialuit dwellings, which likely contained clearly visible wall and roof timbers projecting from a collapsed sod mound, would have been scavenged for wood. Older dwellings, on the other hand, would have been collapsed and decomposed, making their structural timbers inappropriate for use as firewood.

Chronology. The chronology of Feature 1 can be determined with a fair degree of certainty on the basis of historical artifact typologies and the documentary record. The occupation can be considered to have terminated before 1889, for in that year Charles Stockton (1890; see map reprinted in Bockstoce 1977:35), captain of the U.S.S. Thetis, mapped Pauline Cove and noted four houses in an "abandoned Indian village," which was, of course, an Inuvialuit village. From 1889, Pauline Cove was heavily utilized by whalers and no further mention is made of the occupation of these houses. Indeed, early photos of the area confirm that winter houses were no longer occupied in that portion of the site. In addition, if Feature 1 had been occupied during or after the incursion of whalers, many more types of imported artifacts would be expected to be present in the sample.

Before a discussion of the chronological information evident in the artifact sample, the question of intrusive artifacts must be considered. After its abandonment, Feature 1 may have served as a hunting blind because of its raised sod rim and its position at a distance from the main whaler settlement but adjacent to a large area of tundra and marsh frequented by migratory birds and caribou. As a result, a number of Euroamerican artifacts related to hunting are present in upper levels of the site. To determine which cartridge types are associated with the house occupation, the average depth for each caliber was calculated. Three calibers were determined to be intrusive because of their presence at relatively shallow depths: .22, .25, and .30 caliber. Three additional calibers—.44 rimfire, .44-40 centerfire, and .45-70 centerfire—were found to exist at significantly greater average depths, with some examples recovered on and under benches. In addition to the intrusive cartridge casings, all Euroamerican artifacts recovered from the highly disturbed entrance tunnel were excluded from the sample.

The remaining trade goods include a number of categories that provide some chronological information. Two of the six .44 rimfire cartridges exhibit a raised "H" headstamp that refers to the "Henry" breach-loading rifle cartridge. This cartridge type was first produced in 1861 but was not widespread until several years later (Williamson 1952). It was produced until "about 1934" (Barnes 1989:367) but was replaced in most instances by the more practical centerfire cartridges before the turn of the century. Both of the other cartridge types, 44-40 and 45-70, were first produced in 1873 (Barnes 1989). In the case of the 45-70 cartridges, four of the headstamps read "79 R 7 L," and a fifth reads "79 R 8 L." These headstamps may indicate the month and year of manufacture, July 1879 and August 1879, respectively (Cargill and Smith 1990:396). These three cartridge calibers were not necessarily used at the same time. Rather, a series of guns and ammunition types may have been traded in over one or several decades. Alternatively, it is possible that earlier cartridge cases may have been curated, to be recycled later as blunt arrowheads or other implements. Nevertheless, according to the available evidence, Feature 1 must have been occupied between about 1870 and 1889. It is even possible that this house was occupied during the winter immediately before the whalers' arrival in 1889.

Artifacts. Numerically, imported trade goods, and particularly those derived from Euroamerican sources, dominate the total artifact assemblage, representing 880 of the one thousand technounits from Feature 1. (See Table 10 and Figure 15.) The imported category is composed primarily of two functional classes: artifacts relating to the use of firearms, and artifacts having a decorative function. Other imported Euroamerican artifacts include a brass and an

Table 10. Technounit Frequencies, Pauline Cove Feature 1

Imported Technounits	*n*
Land Hunting	
Bullet, 44	2
Cartridge case, 44R	5
Cartridge case, 44–40	9
Cartridge case, 45–70	9
Gunpowder flask fragment	2
Percussion caps box lid	1
Blunt arrowhead, cartridge case	2
Fishing	
Fish lure, ivory	1
Men's Activities	
Nail, square	1
Engraving tool point, iron	1
Women's Activities	
Ulu blade, iron	1
Thimble, metal	2
Miscellaneous Activities	
Button, brass	1
Bead, glass	821
Pendant, cartridge case	4
Pipe lid	1
Bottle fragment, glass	3
Labret, ivory	1
Small human figure, ivory	1
Broken human figure, ivory	1
Unidentified or Debitage	
Iron	3
Brass	1
Soapstone	1
Ivory	6
Locally Procured Technounits	*n*
Sea Hunting	
Harpoon foreshaft	1
Harpoon socket piece	1
Harpoon ice pick	1
Net gauge, seal	2
Land Hunting	
Arrowhead, antler	1

(continued)

Table 10. ***Continued***

Arrowhead, stone	1
Arrowhead, blunt	2
Feather cutting board	1
Projectile point preform	1
Blunt arrowhead shaft, wood	2
Fishing	
Fish hook barb, bone	1
Fish spear barb (?)	1
Fish line sinker	1
Net float	4
Net weight	1
Net gauge, fish	4
Netting needle	2
Fishing ice pick	1
Transportation	
Swivel spindle	1
Men's Activities	
Knife handle	1
Bowdrill mouthpiece	1
Wedge	1
Engraving tool handle, wood	1
Women's Activities	
Cobble spall scraper	1
Endscraper	2
Scraper, slate	1
Ulu blade, slate	1
Ulu handle	1
Boot creaser (?)	1
Needle, bone	1
Lamp, stone	1
Platter fragments, wood	3
Rectangular stone slab	2
Spoon, wood	1
Miscellaneous Activities	
Clothing fragment (?), skin	1
Comb, antler	1
Amulet box	5
Amulet box lid	3
Model platter (?), wood	1
Pipe stem, antler	1
Unidentified or Debitage	
Mammoth ivory	1

(continued)

Table 10. *Continued*

Locally Procured Technounits	*n*
Stone	13
Skin	6
Wood	21
Whalebone	4
Baleen	5
Antler	8
Bone	2
TOTAL	**1000**

Table by author.

iron thimble, an iron ulu blade, an iron engraving tool tip, and a number of undiagnostic glass and metal fragments, while several ivory and soapstone artifacts indicate the continuation of trade in traditional materials.

As already stated, the use of firearms is indicated not only by a considerable number of cartridge cases but also by two .44 caliber bullets and the remains of containers for gunpowder and percussion caps. The cartridge types represented are .44 rimfire, .44 centerfire, and .45 centerfire. Many of the cartridge cases have been modified into new forms. For example, several have been drilled, probably for use as pendants, and two have been mounted on wooden arrow shafts for use as blunt arrowheads.

In terms of decorative artifacts, the great number of glass beads may have been employed as decoration on clothing, on implements such as bags, or in specialized ornamental contexts such as earrings. Beads were classified into fourteen types, with most being small beads of solid colors. The most frequently occurring colors were blue and green, although white, red, pink, turquoise, black, and clear beads were also present. Three more complex bead types were also present: white-lined red, black-lined red, and faceted deep blue beads. Also likely used as ornaments were the brass button, which bears a military eagle design, and perhaps the metal pipe lid, which shows no sign of burning on its interior surface, a condition that may indicate it was never used as a pipe lid.

Turning to traditional artifacts, sea mammal hunting is indicated by only four implements: a harpoon socket piece, a harpoon foreshaft, and two net gauges with a large gauge appropriate for sealing. The presence of seal net gauges is significant, as it indicates that the important seal-netting complex was being utilized in addition to breathing-hole and open-water sealing.

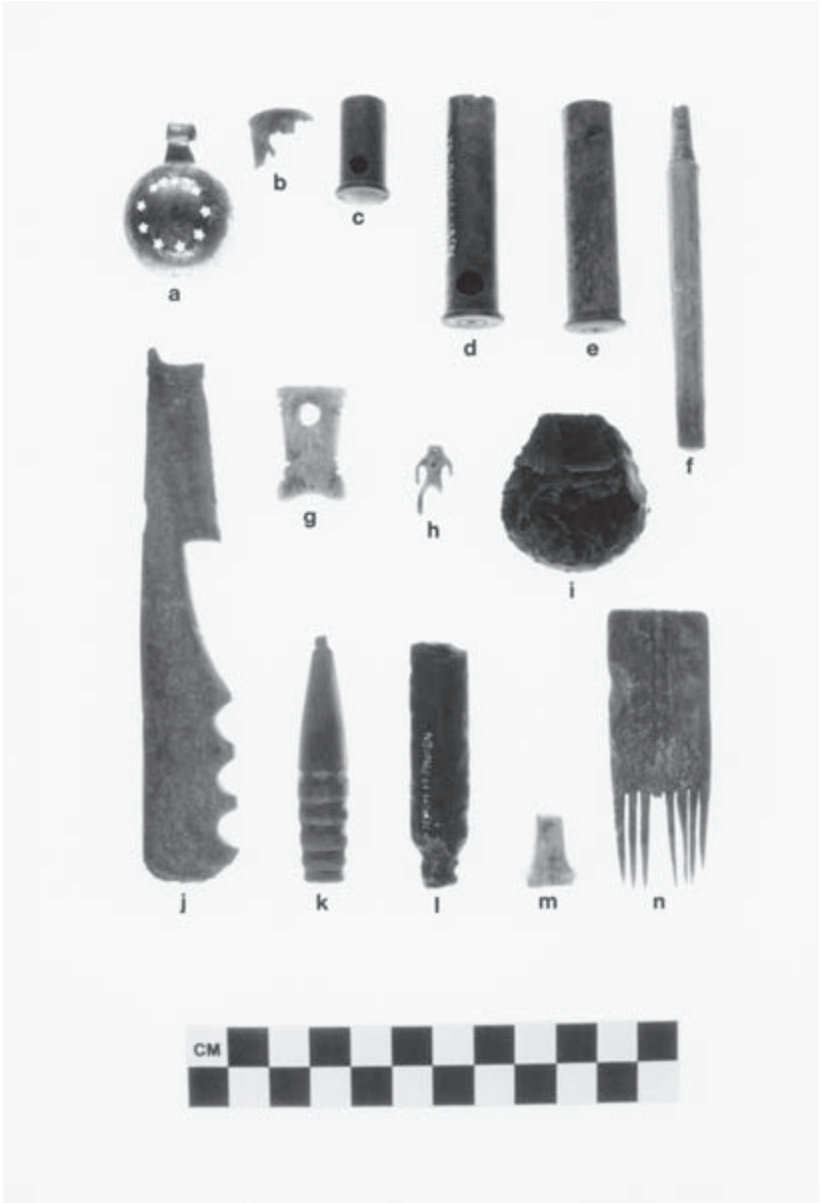

FIGURE 15. Pauline Cove Feature 1, representative artifacts: *a*, metal pipe lid; *b*, thimble fragment; *c*, drilled .44 rimfire cartridge case; *d*, *e*, drilled .45-70 cartridge cases; *f*, bone pipe stem; *g*, ivory fish lure; *h*, ivory human figure; *i*, endscraper; *j*, net gauge; *k*, fish line sinker; *l*, chert arrow point; *m*, ivory labret; *n*, decorated antler comb. (Photo by the author; reprinted with permission of the Canadian Archaeological Association, from figure 5 in T. Max Friesen, "The Qikiqtaruk Archaeology Project 1990–92: Preliminary Results of Archaeological Investigations on Herschel Island, Northern Yukon Territory," in *Bridges Across Time: The NOGAP Archaeology Project*, edited by Jean-Luc Pilon [Occasional Paper No. 2], 1994.)

Land mammal hunting is indicated by one chipped and ground stone arrowhead and one very small fragment of a probable antler arrowhead tang. Bird hunting is likewise represented by two blunt arrowheads, one of which is made of whalebone, and two wooden arrow shafts. A feather cutting board also relates to arrow manufacture. Fishing is represented by sixteen technounits; eleven relate to netting technology and two represent line fishing. In addition, a fish stringing needle, a fishing ice pick, and a probable fish spear barb relate to acquisition of fish. It is interesting that fish are poorly represented in the faunal sample from this feature, despite generally excellent preservation. This could be the result of processing or consumption of fish elsewhere, or more likely this equipment was used during seasons other than those in which this house was occupied. The fish net gauges vary in gauge length from 3.9 to 4.6 cm. Of particular interest is the stone fish hook sinker. Distribution of this type of sinker appears to be limited to the Inuvialuit area (Mathiassen 1930: plate 4; McGhee 1974: plates 6, 25). Transportation is represented by only one item: a spindle probably originating in a dog trace swivel.

Men's activities are indicated by a knife handle, a bowdrill mouthpiece, a wedge, and an engraving tool handle. Women's activities are represented by a much greater diversity of implements. Skin working was performed with a ground slate scraper, a cobble spall scraper, and two endscrapers. Ulu use is seen in only a single slate ulu blade and an ulu handle. One bone needle is indicative of sewing, and a stone lamp fragment indicates continued reliance on sea mammal oil lamps. This category is rounded out with a spoon, three platter fragments of wood, and two rectangular stone slabs probably used in cooking.

Additional artifacts include an antler comb, an ivory labret, eight "amulet box" parts, a tiny ivory human figure, and the leg of a larger human figure; these latter two objects may represent amulets. Finally, it is worth noting that one artifact of mammoth ivory was found; it appears to be a reworked harpoon head preform.

Faunal Remains. The faunal sample from Pauline Cove Feature 1 is dominated by mammal bones, which make up 88.5 percent of the NISPs. (See Table 11.) Birds contribute 6.5 percent, and fish are relatively rare at only 5.0 percent.

Within the mammal sample, seals dominate, contributing 73.0 percent. Small seals are by far the most common category, with a great majority being ringed seal; bearded seals are present but rare, represented by only two specimens. Other mammal taxa are uncommon, with the exception of fox, which contributes 20.5 percent of all NISPs.

Table 11. Vertebrate Frequencies, Pauline Cove Feature 1

	NISP	NISP % Class	MNI	MNI % Class
Mammals				
Muskrat	6	0.5	2	6.3
Small rodent spp.[1]	*20*			
Beluga whale	2	0.2	1	3.1
Bowhead whale	1	0.1	1	3.1
Wolf	1	0.1	1	3.1
Dog/wolf	10	0.8	1	3.1
Arctic fox	51	4.1	8	25.0
Red fox	1	0.1	1	3.1
Arctic/red fox	201	16.3		
Grizzly/polar bear	14	1.1	2	6.3
Least weasel	1	0.1	1	3.1
Bearded seal	2	0.2	1	3.1
Ringed seal	19	1.5	3	9.4
Ringed/harbor seal	880	71.3	8	25.0
Caribou	45	3.6	2	6.3
Unidentified mammal	814			
Total Mammal	**2048**	**88.5**	**32**	**54.2**
Birds				
Red-throated/pacific loon	8	8.4	2	11.8
Loon spp.	1	1.1		
Tundra swan	2	2.1	1	5.9
Goose spp.	1	1.1	1	5.9
Common eider	5	5.3	1	5.9
Common/king eider	4	4.2	1	5.9
Scoter	1	1.1	1	5.9
Eider/scoter	6	6.3		
Long-tailed duck	12	12.6	2	11.8
Duck spp.	11	11.6		
Ptarmigan	24	25.3	4	23.5
Shore bird	1	1.1	1	5.9
Glaucous/herring gull	19	20.0	3	17.6
Unidentified bird	55			
Total Bird	**150**	**6.5**	**17**	**28.8**
Fish				
Salmonidae spp.	3	5.5	1	10.0
Whitefish/cisco	20	36.4	5	50.0
Whitefish/cisco/round whitefish	10	18.2	2	20.0
Inconnu	6	10.9	2	20.0
Coregoninae spp.	14	25.5		
Salmonidae spp.	2	3.6		
Unidentified fish	61			
Total Fish	**116**	**5.0**	**10**	**16.9**
TOTAL	**2314**		**59**	

Table by author.

1. Italicized taxa are assumed to be intrusive, and are not included in NISP or MNI calculations.

The bird list is quite diverse, dominated by many waterfowl taxa; however, the single most common taxon is ptarmigan. The fish sample is made up primarily of whitefish and cisco, indicating a continued reliance on netting.

The Marginal Periphery/Early Contact Period

Buildings constructed by Euroamerican whalers still dominate Pauline Cove, and early photographs and documents indicate that many Inuvialuit lived there during the whaler period. Therefore, at the outset of the Qikiqtaruk Archaeology Project it seemed a reasonable expectation that the archaeological record would contain numerous remains dating from the 1890s. In practice, however, samples relating to this period proved difficult to isolate. Most of the features are either too old (precontact or protocontact), too recent (1910 or later), or too mixed. This is probably attributable to the heavy use of Pauline Cove in the decades following the whaling period, which would have obscured or destroyed the whaler-period components, many of which would have been located on or near the surface of the site (Friesen 2009b). Eventually, two components dating to the early contact period were identified and excavated.

Pauline Cove Feature 8

Feature 8 is an enigmatic structure located in the south-central area of the site.[4] (See Figures 16 and 17.) It was originally visible as a low (approximately 35 to 40 cm high) horseshoe-shaped raised rim of sod enclosing an area of approximately 3×3.5 m, which lacked any depression indicating an entrance tunnel. An initial test pit near the south end revealed a floor constructed of parallel driftwood logs, incorporating several pieces of milled lumber and barrel staves, suggesting a traditional Inuvialuit occupation. Associated with this floor were a few historical artifacts, including a clay pipe fragment. On further excavation, however, it became apparent that this "floor" covered an area of only approximately 1×2.5 m near the front of the structure. The rest of the area enclosed by the sod rim was largely sterile. Excavation beneath this floor yielded a dense artifact cluster that appeared to date to the early contact period. Beneath this cluster of artifacts was another floor of almost exactly the same size as the upper one. However, the lower floor was constructed of boards, barrel staves, and packing crate ends. Round nails, exclusively, were used in its construction.

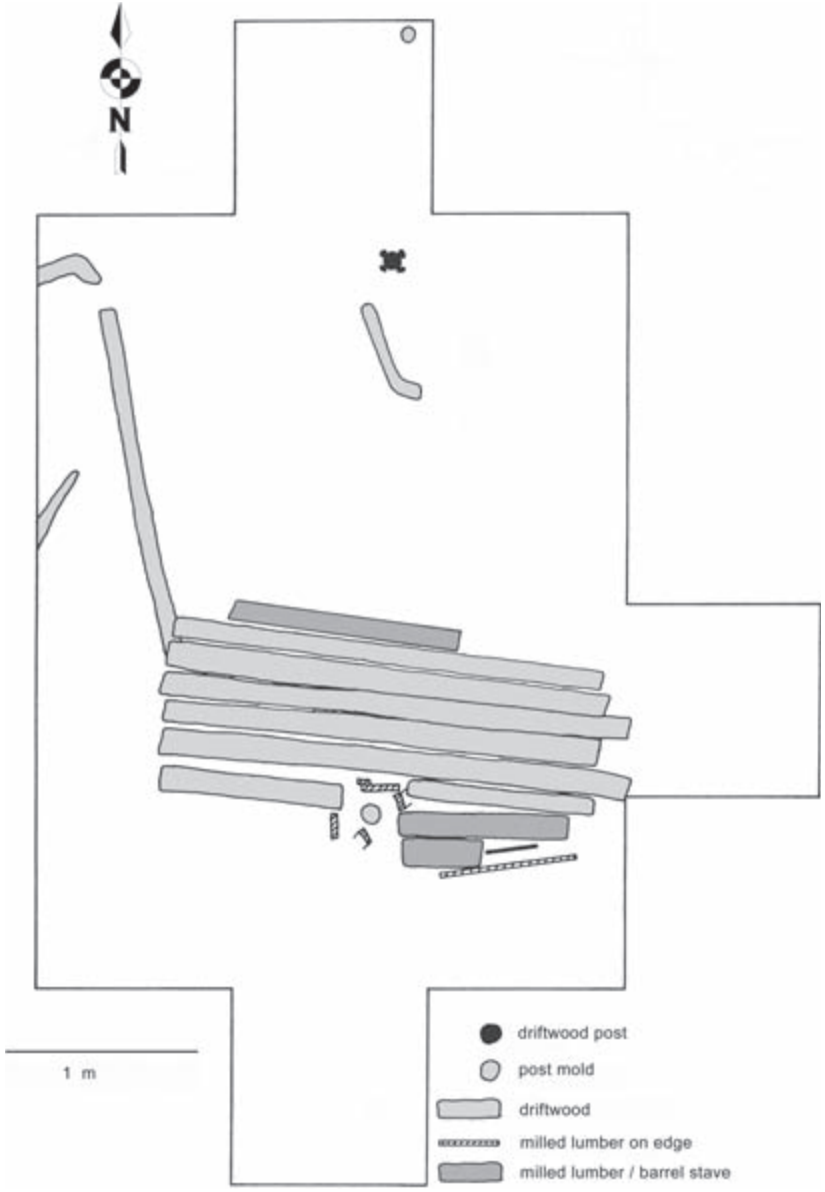

FIGURE 16. Pauline Cove Feature 8, plan view. (Illustration by author, after figure 6 in Friesen 1994.)

FIGURE 17. Pauline Cove Feature 8, photo looking north. (Photo by the author; reprinted with permission of *Alaska Journal of Anthropology*, from figure 4 in T. Max Friesen, "Event or Conjuncture? Searching for the Material Record of Inuvialuit-Euroamerican Whaler Interaction on Herschel Island, Northern Yukon," 7, no. 2 [2009]: 45–61.)

Feature 8 does not fit readily into known architectural categories from the region, making interpretation difficult. The raised sod rim indicates insulation of some type of dwelling structure; however, it was clearly not a standard house. Although the well-defined floor area in the front of the structure is underlain by a second floor, no walls, corner posts, entrance tunnel, or benches were observed. The basal portions of two posts located in the middle of the long axis of the feature probably indicate that this was in fact a tent foundation, perhaps banked with sod and with a complete or partial wood floor. It may have resembled, in some respects, the contact-period qarmat of the eastern Arctic (Stevenson 1984). Two-pole canvas tents that might leave a pattern such as this are visible in the earliest photograph of the Inuvialuit settlement on Herschel Island, dated around 1894 (reproduced in Bockstoce 1986:267).

The description thus far leaves unexplained the two floors and the rich artifact-bearing horizon between them. It is unlikely that this was a subfloor cache, because a number of broken or apparently useless objects were located in it. On the other hand, it is unlikely to be a refuse disposal area, because it is too well constructed and contains a number of valuable items, including three labrets and many beads. The location of this feature is also anomalous, because it is situ-

ated at a significant distance from the cluster of whaler-associated buildings. For the moment, the precise nature of this feature must remain enigmatic.

Chronology. A number of lines of evidence suggest that Feature 8 was occupied during the 1890s and is, therefore, contemporaneous with the occupation of Herschel Island by Euroamerican whalers. Six of the eight firearm cartridge types in Feature 8 are not chronologically diagnostic; however, two were produced for a relatively short period and therefore provide some chronological information. The .44 Smith & Wesson Russian was introduced in 1870 and phased out shortly after 1907 (Barnes 1989:245). The 45-125 Winchester Express was introduced in 1886, after which "it was not widely used and was discontinued after a few years" (Barnes 1989:138). The cartridge was produced until 1916, but presumably in very small numbers.

Certain of the glass bottle fragments are also chronologically diagnostic. Two case bottles were produced using the dip mold technique. This production method is generally early, with its use declining during the second half of the nineteenth century, although in many contexts it is "not useful for dating" (Jones and Sullivan 1989:26). Turn-molded bottles, represented by two specimens, generally date from the 1870s to the 1920s (Jones and Sullivan 1989:31). Finally, the technique using a two-piece mold with separate base, represented by a minimum of one specimen, was the most common type during the late nineteenth and early twentieth centuries but was made obsolete by mechanical manufacturing techniques in the 1920s (Jones and Sullivan 1989:29).

The dating of this artifact sample to the whaler periods is reinforced by more indirect evidence, namely its comparison with a sample from Pauline Cove Feature 6 (Friesen 1993, 1994). Feature 6 will not be described in detail herein; however, its contents are relatively securely dated to the period from around 1905 to 1920. In contrast to Feature 8, which contains all hand-blown bottles, all bottles in Feature 6 are machine made. This contrast implies a significant gap between occupations, increasing the likelihood that Feature 8 dates to the 1890s.

Artifacts. For purposes of the present research, only those artifacts recovered from within the feature (as opposed to adjacent test pits) and below the upper sod level will be analyzed in order to avoid the inclusion of intrusive artifacts. The artifact sample from Feature 8 is dominated by imported Euroamerican trade goods, although it also includes several traded items made of ivory. (See Table 12 and Figure 18.) A total of eighty-one artifacts relate to hunting, including an impressive array of eight calibers of cartridge case. Three of these calibers were used in handguns: .38 Smith & Wesson, .41 Long Colt, and .44 Smith & Wesson Russian; the remaining types were used in rifles. In addition

Table 12. Technounit Frequencies, Pauline Cove Feature 8

Imported Technounits	*n*
Land Hunting	
Bullet, 44	2
Bullet, unknown caliber	1
Cartridge case, 38	4
Cartridge case, 40–65	1
Cartridge case, 41 Long Colt	1
Cartridge case, 44 Smith & Wesson Russian	1
Cartridge case, 44–40	22
Cartridge case, 45–60	29
Cartridge case, 45–70	7
Cartridge case, 45–125	2
Cartridge case, unknown caliber	1
Shotgun shell, 10-gauge	9
Gun grip (?)	1
Transportation	
Clasp	2
Clasp tongue	1
Men's Activities	
Knife blade, iron	2
Knife handle, half	2
Engraving tool tip, iron	3
Screw	3
Nail, round	42
Nail, square	78
Window fragment	6
Women's Activities	
Small scraper, glass	1
Cobble spall scraper, glass	2
Lamp chimney fragment	10
Candle	1
Coal nodule	3
Bowl fragment, ceramic	1
Cup fragment, ceramic	5
Vessel fragment, ceramic	20
Tray, metal	1
Bowl, iron	1
Spoon, metal	1
Can fragment	35
Can key	3
Clothing and Ornaments	
Boot fragment, rubber	3

(continued)

Table 12. ***Continued***

Belt buckle	1
Button	11
Snap	5
Button tab	1
Fabric fragment	8
Mitten fragment	1
Sunglass lens	1
Labret, glass	1
Bead, glass	92
Bead, glass, large	4
Bracelet link, brass	65
Bracelet bead, glass	7
Labret, ivory	2
Miscellaneous Activities	
Pipe bowl, wood	1
Pipe bowl, brass	1
Pipe fragment, clay	3
Pipe stem fragment, plastic	2
Pipe stem band, brass	1
Pipe lid, metal	1
Pipe rim, metal	1
Bottle fragment, glass	234
Cork	10
Lid, metal	2
Pencil eraser, rubber	1
Pencil top, metal	1
Letter "H," iron	1
Unidentified or Debitage	
Ferrous metal	136
Brass	3
Glass	5
Fiber	1
Wood	1
Ivory	7
Unidentified material	1
Locally Procured Technounits	*n*
Land Hunting	
Arrowhead	1
Fishing	
Net sinker	1
Fish gorge	1

(continued)

Table 12. *Continued*

Locally Procured Technounits	*n*
Engraving tool handle, wood	3
Whetstone	1
Women's Activities	
Rectangular stone slab	1
Clothing and Ornaments	
Pendant (?), antler	1
Miscellaneous Activities	
Model harpoon head	1
Unidentified or Debitage	
Skin	1
Wood	13
Bone	6
Antler	1
Whalebone	2
TOTAL	**952**

Table by author; a preliminary version appeared in Friesen 2009b.

to these cartridge cases are eight complete or partial 10-gauge shotgun shell cases, as well as a small fragment of plastic or rubber that probably originated as part of a gun grip. Three ferrous-metal clasp parts may be related to dog harnesses and have been placed in the transportation category.

Activities usually associated with men are seen in a range of artifact categories, including a complete knife, a knife blade, three iron engraving tool tips, and a variety of items of hardware. The hardware category includes more square than round nails, a fact that is noteworthy because only round nails were used in construction of the feature floor. Women's activities are seen in skin working with small and large scrapers manufactured from glass, in lighting as seen in lamp chimney fragments and a candle, and in heating, which is represented by a nodule of coal. Ceramic sherds represent a minimum of four objects: one teacup, one ironstone vessel (possibly a chamber pot), one ironstone cup or mug, and one yellow-ware rim sherd, probably from a serving bowl. Additional artifacts associated with food preparation and consumption include a metal tray and spoon, an iron bowl, and fragments of food cans.

Two hundred technounits relate to clothing and ornament. Clothing fasteners include eleven buttons of varying materials, five snaps of brass or ferrous metal, a leather strip containing a slit for insertion of a button,

FIGURE 18. Pauline Cove Feature 8, representative artifacts: *a*, .45-125 cartridge case; *b*, .44 Smith & Wesson Russian cartridge case; *c*, tea cup handle; *d*, clay pipe bowl; *e*, clay pipe stem; *f*, brass button; *g*, bone button; *h*, faceted blue glass bead; *i*, tinted eyeglass lens fragment; *j*, decorated knife handle; *k*, glass labret; *l*, ivory labret; *m*, blunt arrowhead; *n*, net sinker; *o*, fish gorge. (Photo by the author; reprinted with permission of the Canadian Archaeological Association, from figure 7 in T. Max Friesen, "The Qikiqtaruk Archaeology Project 1990–92: Preliminary Results of Archaeological Investigations on Herschel Island, Northern Yukon Territory," in *Bridges Across Time: The NOGAP Archaeology Project*, edited by Jean-Luc Pilon [Occasional Paper No. 2], 1994.)

and a brass belt buckle. The lone brass button has an eagle design on the front, with text on the back reading "HENRY V. ALLEN & CO N.Y." Eight fabric fragments were collected, as well as a woolen mitten. One rubber boot is represented by its top portion, which has been cut away from the foot portion. Finally, a broken oval of flat, darkly tinted glass was probably derived from a pair of sunglasses. Ornamental artifacts include 102 glass beads, a labret ground from a glass stopper, and a bracelet. The beads represent a great range of forms and include two large faceted specimens, one blue and one yellow. The bracelet is not complete; the remaining portion is composed of a double brass ball-link chain with seven small green glass flowers. Note that as with other artifacts, this is quantified in terms of technounits (bracelet links and bracelet beads) rather than as a single artifact. Also in this category are two peg-shaped ivory labrets, which are very similar in size to each other and to the glass labret also recovered from this feature.

A "miscellaneous activities" category contains a large number of artifacts that do not fit neatly into other categories. A great majority of the 233 glass container fragments are from large bottles, most of which almost certainly originated as liquor bottles, although a few are from smaller "medicine"-type bottles. In addition, ten corks and two lids were recovered. Eight artifacts are related to tobacco smoking. Multiple pipe styles are indicated by three ceramic pipe stems, one ceramic pipe bowl, two plastic stem fragments, and one wood or briar bowl. In addition, one metal pipe lid, with a fragment of its accompanying pipe rim, was recovered. Finally, a pencil and a metal letter "H" were recovered, the latter probably originating as part of a sign.

Feature 8 contained a small but diverse assortment of traditional Inuvialuit artifacts. Land hunting is represented by one artifact: a small bone arrowhead with an incomplete tang. Fishing is represented by an antler fish gorge and a notched cobble net sinker. Men's activities are seen in three engraving tool handles made of wood, and a whetstone. Women's activities are seen in a rectangular stone slab probably used in cooking. One traditional artifact is tentatively placed in the ornamental category: a rectangular antler pendant. One model harpoon head of bone was also recovered from Feature 8, possibly representing an amulet.

Faunal Remains. Before describing the faunal remains, it should be noted that twenty-three botanical remains representing imported food products were recovered from Feature 8: eight hazelnut shell fragments, six cherry pits, seven plum pits, and two walnut shell fragments.

Mammals are the most common class in the Feature 8 sample, contributing 81.0 percent of all specimens. (See Table 13.) Seals make up 62.1 percent of the

Table 13. Vertebrate Frequencies, Pauline Cove Feature 8

	NISP	NISP % Class	MNI	MNI % Class
Mammals				
Small rodent spp.[1]	*1*			
Beluga whale	1	0.3	1	10.0
Dog	105	32.3	1	10.0
Dog/wolf	3	0.9		
Arctic/red fox	2	0.6	1	10.0
Polar bear	1	0.3	1	10.0
Grizzly/polar bear	1	0.3		
Bearded seal	1	0.3	1	10.0
Ringed seal	3	0.9	2	20.0
Ringed/harbor seal	198	60.9	1	10.0
Caribou	10	3.1	2	20.0
Unidentified mammal	644			
Total Mammal	**969**	**81.0**	**10**	**35.7**
Birds				
Red-throated/Pacific loon	6	8.7	1	7.7
Brant goose	1	1.4	1	7.7
Goose spp.	3	4.3	1	7.7
Common/king eider	3	4.3	1	7.7
Eider/scoter	1	1.4		
Long-tailed duck	14	20.3	3	23.1
Duck spp.	18	26.1	1	7.7
Falcon	1	1.4	1	7.7
Ptarmigan	22	31.9	4	30.8
Unidentified bird	42			
Total Bird	**111**	**9.3**	**13**	**46.4**
Fish				
Whitefish/cisco	2	4.8	1	20.0
Whitefish/cisco/round whitefish	4	9.5	2	40.0
Inconnu	20	47.6	2	40.0
Coregoninae spp.	5	11.9		
Salmonidae spp.	11	26.2		
Unidentified fish	75			
Total Fish	**117**	**9.8**	**5**	**17.9**
TOTAL	**1197**		**28**	

Table by author.

1. Italicized taxa are assumed to be intrusive, and are not included in NISP or MNI calculations.

identified mammal sample, with a great majority being ringed seal. These mammalian numbers may be somewhat skewed by the presence of a partial dog skeleton consisting of 105 specimens that constitute 32.3 percent of the identified mammal specimens. Other mammals are present in only trace numbers.

Birds are relatively common, with 111 specimens representing 9.3 percent of the total sample. Waterfowl dominate, with particularly large numbers of long-tailed duck; however, ptarmigan are the single most common taxon, representing 31.9 percent of identified birds.

Fish contribute only 9.8 percent of the total sample. Unlike the other contexts discussed in this book, inconnu is the most common fish taxon. Unlike the whitefish and cisco, which are most frequent in all the other samples in this study, the closely related inconnu will take a hook and thus can be obtained both through netting and jigging (Morrison 2000b). Thus, these fish frequencies may indicate a different fish acquisition strategy relative to the other contexts.

Pauline Cove Feature 5

Before excavation, Pauline Cove Feature 5 was visible as the largest Inuvialuit house mound at Pauline Cove, standing over one meter above the surrounding land surface and covering a relatively large area. Excavation revealed a winter house similar in dimensions to Features 1 and 7 at Pauline Cove, and containing one rear and one right side alcove. (See Figure 19.) The large size of the mound apparently resulted from a relatively massive log construction and copious amounts of insulating earth and sod piled against the walls, rather than from the dimensions of the house interior. The Feature 5 excavations were relatively rich, yielding large artifact and faunal samples. However, subsurface levels were severely disturbed, with the exception of a few small pockets of apparently undisturbed precontact or protocontact artifacts.

Remarkably, the only large component that appeared to be relatively unmixed, and therefore useful for the present analysis, is an early contact-period component recovered from the uppermost excavation layer as well as the entrance tunnel fill. The upper excavation layer consisted of the surface sod and the uppermost level of soil, to the base of the active root system at a depth of 8 to 12 cm. Subsequent excavation of the tunnel yielded an assemblage that closely resembled that from the surface of the feature and that is therefore incorporated into the sample described here. It should be noted that the sample might include a few earlier artifacts from the components directly underlying the surface level. However, given that the Feature 5 and Feature 8 samples contained roughly similar ratios of traditional to Euroamerican artifacts, and given that none of the traditional artifacts from the Feature 5 surface sample is diagnostically early, the number of potentially intrusive artifacts is assumed to be low.

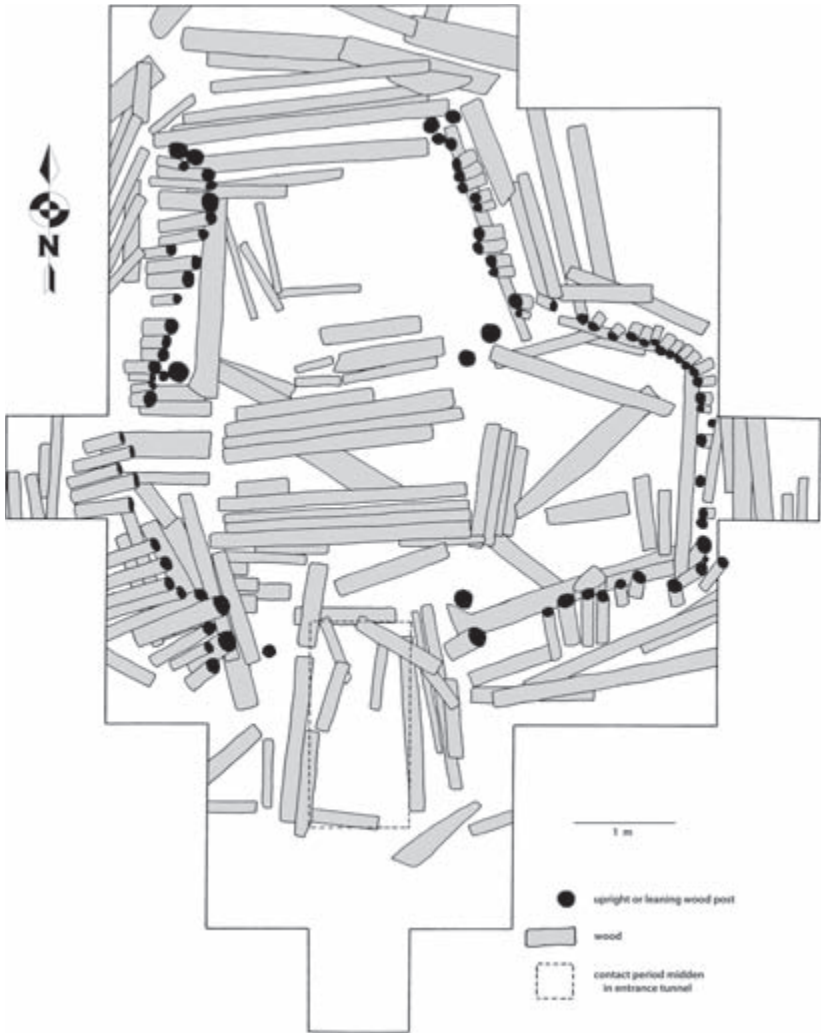

FIGURE 19. Pauline Cove Feature 5, plan view. (Illustration by author.)

This occupation is best interpreted as the result of a summer tent placed on the mound created by a collapsed earlier winter house. A similar placement of a contact-period tent floor on a house mound was recorded by Smith (1990:102) at the Utqiagvik site in Barrow, Alaska. Such a placement probably resulted from the fact that house mounds are the highest points on the otherwise low, boggy, and occasionally inundated tundra. The dense accumulation of artifacts in the entrance tunnel probably represents a midden associated with the tent.

Chronology. Only one artifact was removed from the Feature 5 sample because it was deemed intrusive, namely a machine-made crown cap lip fragment from a brown glass bottle that appears to be a recent beer bottle. This specimen was located very close to the surface. The remainder of the artifact sample closely resembles that from Feature 8 and does not appear to contain any recent artifacts or any typologically early precontact artifacts. As with Feature 8, all identifiable bottles are manufactured by hand as opposed to by automated processes. In addition, all rifle cartridge types were in use during the whaling period. One chronologically sensitive artifact consists of fragments of five pages of the novel *The Freaks of Lady Fortune*, by Maria Crommelin (1889, 1891). This novel was originally published in 1889, with a first American edition in 1891, making it a good candidate for having been brought to Herschel Island during the 1890s. Finally, as with Feature 8, the profound differences between the Feature 5 sample and that from Feature 6 imply a significant time gap and, therefore, a chronological position within the period between 1889 and 1905.

Artifacts. Artifacts from Feature 5 cover a wide range of both historical trade goods and locally produced traditional forms. (See Table 14.) Firearms use is seen in six cartridge case types, dominated by 30-30 and 44-40 calibers. Additionally, three bullets of varying calibers were recovered. Men's activities are seen in an iron knife blade, as well as a great variety of hardware including bolts, screws, and both round and square nails. Imported forms associated with women's activities include a small glass scraper, fragments of lamp chimney and burner, several categories of ceramic containers relating to food preparation and consumption, and thirty-six can fragments.

Clothing is seen in a boot insole, a belt buckle, three buttons, a mitten, and fourteen fabric fragments. One hundred beads were recovered, and a bracelet consisting of white glass beads with brass links was also found in this feature. Additional ornamental artifacts are seen in an ivory earring and an ivory labret.

One of the noteworthy aspects of the artifact sample from the Feature 5 surface assemblage is the diversity of miscellaneous activities represented, many of which relate to social interactions. For example, the sample includes many components of what was eventually identified as an accordion, including keys, reeds, and bellows fragments. Tobacco use is indicated by fragments of clay, corncob, and wood pipes, and three playing cards indicate leisure activities. Finally, a very large number of glass bottle fragments are derived primarily from liquor bottles.

A small but diverse group of locally produced artifacts was found. Two Nuwuk harpoon heads and a darting harpoon head relate to sea mammal hunting,

Table 14. Technounit Frequencies, Pauline Cove Feature 5

Imported Technounits	*n*
Land Hunting	
Harpoon head rivet, iron	1
Bullet, 22	1
Bullet, 44	1
Bullet, unknown caliber	1
Cartridge case, 30–30	8
Cartridge case, 30 Army	1
Cartridge case, 38	2
Cartridge case, 38 Smith & Wesson	1
Cartridge case, 44–40	23
Cartridge case, 45–70	3
Blunt arrowhead, cartridge case	1
Men's Activities	
Knife blade, iron	1
Bolt	2
Screw	4
Nail, round	20
Nail, square	9
Saw blade	1
Chicken wire fragment	1
Pail handle	1
Spring, iron	1
Women's Activities	
Small scraper, glass	1
Lamp burner fragment	2
Lamp chimney fragment	5
Bowl fragment, ceramic	2
Cup fragment, ceramic	3
Vessel fragment, ceramic	5
Can fragment	36
Jar lid	1
Clothing and Ornaments	
Boot insole	1
Belt buckle	1
Button	3
Fabric fragment	14
Mitten fragment	1
Bead, glass	97
Bead, glass, large	3
Bracelet link, brass	19
Bracelet bead, glass	18
Ring (?)	1

(continued)

Table 14. *Continued*

Imported Technounits	*n*
Earring, ivory	1
Labret, ivory	1
Miscellaneous Activities	
Accordion key	7
Accordion key pad	7
Accordion key wire	7
Accordion reed frame	5
Accordion reed	7
Accordion bellows fragment	1
Accordion frame fragment	6
Playing card	3
Pipe bowl, wood	1
Pipe bowl, corncob	1
Pipe fragment, clay	12
Pipe stem band, brass	1
Bottle fragment, glass	528
Lid, metal	2
Cork	3
Unidentified or Debitage	
Ferrous metal	63
Brass	5
Lead	1
Other metal	2
Glass	7
Plastic/Rubber	2
Paper	5
Ivory	1

Locally Procured Technounits	*n*
Sea Hunting	
Harpoon head, Nuwuk	2
Darting harpoon head	1
Land Hunting	
Arrowhead	1
Bola weight, bone	1
Arrow shaft, wood	1
Fishing	
Net float	1
Net sinker	1
Transportation	
Swivel plate	1
Swivel spindle	1

(continued)

Table 14. *Continued*

Men's Activities	
Bag handle (?)	1
Whetstone	1
Women's Activities	
Scraper, slate	1
Boot creaser (?)	1
Spoon, wood	1
Tray fragment, wood	1
Clothing and Ornaments	
Belt fastener (?), antler	1
Miscellaneous Activities	
Amulet box	1
Whale carving	1
Unidentified or Debitage	
Skin	2
Wood	13
Chert	1
Baleen	3
Slate	2
Bone	8
Antler	6
TOTAL	**1029**

Table by author; a preliminary version appeared in Friesen (2009b).

whereas an arrowhead, a wooden arrow shaft fragment, and a bola weight indicate land hunting. Fish netting is indicated by a single net float and net sinker. Dog sledding is seen in a dog harness swivel consisting of a spindle and plate made of antler. Men's activities are indicated by a whetstone and a possible bag handle, and women's activities are seen in a slate scraper as well as a spoon and tray of wood. The sample is rounded out by an amulet box and a very small carving of a whale.

Faunal Remains. In addition to faunal remains, two imported botanical remains were recovered: one plum pit and one walnut shell fragment.

Mammal bones are dominant in this sample, representing 85.8 percent of all specimens. (See Table 15.) Seals make up 72.8 percent of the identified mammal sample, with a great majority of the bones representing ringed seal. Fox bones are also relatively common, contributing 20.4 percent of specimens,

Table 15. Vertebrate Frequencies, Pauline Cove Feature 5

	NISP	NISP % Class	MNI	MNI % Class
Mammals				
Small rodent spp.[1]	9			
Arctic ground squirrel	1	0.1	1	4.2
Beluga whale	1	0.1	1	4.2
Dog/wolf	5	0.7	1	4.2
Arctic fox	38	5.5	4	16.7
Arctic/red fox	104	14.9	3	12.5
Grizzly/polar bear	5	0.7	2	8.3
Wolverine	2	0.3	1	4.2
Ringed seal	2	0.3	1	4.2
Ringed/harbor seal	505	72.5	8	33.3
Caribou	34	4.9	2	8.3
Unidentified mammal	494			
Total Mammal	**1191**	**85.8**	**24**	**50.0**
Birds				
Red-throated/Pacific loon	2	1.6	1	5.3
Common/yellow-billed loon	1	0.8	1	5.3
Loon spp.	1	0.8		
Common/king eider	2	1.6	1	5.3
White-winged scoter	1	0.8	1	5.3
Eider/scoter	1	0.8		
Long-tailed duck	9	7.1	2	10.5
Harlequin/long-tailed duck	1	0.8		
Mallard	1	0.8	1	5.3
Mallard/pintail	2	1.6		
Dabbling duck	1	0.8		
Duck spp.	8	6.3		
Ptarmigan	94	74.6	10	52.6
Shore bird spp.	1	0.8	1	5.3
Snowy owl	1	0.8	1	5.3
Unidentified bird	31			
Total Bird	**157**	**11.3**	**19**	**39.6**
Fish				
Whitefish/cisco	7	41.2	4	80.0
Whitefish/cisco/round whitefish	6	35.3		
Inconnu	1	5.9	1	20.0
Coregoninae spp.	2	11.8		
Salmonidae spp.	1	5.9		
Unidentified fish	23			
Total Fish	**40**	**2.9**	**5**	**10.4**
TOTAL	**1388**		**48**	

Table by author.

1. Italicized taxa are assumed to be intrusive, and are not included in NISP or MNI calculations.

most or all of which are from arctic fox. Caribou provide 4.9 percent of NISPs, and all other taxa are extremely rare.

Birds occur in the highest frequency of any feature in the present study, at 11.3 percent of the faunal sample. Despite a very long and diverse list of waterfowl, ptarmigan bones are by far the most frequent, contributing ninety-four specimens representing 74.6 percent of the identified bird sample.

Fish are extremely rare in this sample, at only 2.9 percent of the total. This low frequency may be in part a result of taphonomic issues, because much of this sample was recovered from the upper levels of this feature. However, generally excellent preservation of materials such as wood, skin, and paper indicates that taphonomy is unlikely to be the only explanation for the rarity of fish. As is the case for most other samples, whitefish and cisco are present in highest frequencies among the fish specimens.

Summary

Considered together, these features provide a relatively complete record of Inuvialuit culture history on Herschel Island from the late precontact period to the late nineteenth century. Although this archaeological sequence is not without some gaps, the intensity of fieldwork during the Qikiqtaruk Archaeology Project has indicated that further work is unlikely to yield many additional intact samples dating to the precontact, protocontact, or early contact periods. This rarity of intact samples is due in large part to the intensive and varied activities that have occurred at Pauline Cove during the past century. In subsequent chapters, these archaeological data will be used, in combination with previously published archaeological and ethnographic data, to evaluate the expectations outlined in Chapter 5.

The fact that Washout Feature 3 has been dated to the sixteenth century AD indicates that Washout and the neighboring site of Pauline Cove were inhabited more or less continuously from the early Thule period to the twentieth century. The four excavated features at Washout (Friesen and Hunston 1994; Yorga 1980:129; see also Friesen and Arnold 2008 for revised radiocarbon dates), combined with surface finds, indicate that the site was occupied from the thirteenth century AD to at least the sixteenth century. Sometime after the occupation of Washout Feature 3, settlement shifted approximately 500 m along the beach to Pauline Cove, where Feature 7 is interpreted as most likely having been occupied during the eighteenth century AD, beginning an apparently unbroken occupation incorporating Pauline Cove Features 1, 5, and 8 as outlined in this chapter.

Unfortunately, the size of the occupation of Washout/Pauline Cove at any specific period in the precontact or protocontact periods cannot be reconstructed accurately because of at least four factors. First, the Washout site was already partly destroyed when originally described and thus its initial size will never be known. When MacNeish (1956a) visited the site in 1954, he recorded six eroding winter houses, and an unknown number had already disappeared. In subsequent years three additional houses have been exposed and excavated, allowing a minimum estimate of nine winter houses at the site, but it seems probable that it was larger, perhaps much larger, in the distant past. Second, much of the Pauline Cove site has been destroyed or covered over by recent activity, making it inaccessible for archaeological survey. Third, winter houses currently visible on the surface at Pauline Cove cannot easily be assigned to a particular period, so the number of contemporaneous houses cannot be estimated. Fourth, the early ethnohistoric record is made up mainly of observations made during the warm season, when settlement patterns were likely very different from those in the winter.

Despite these issues, it is likely that the site contained multiple occupied houses during any given winter. This probability is based on the fact that the site was the principal winter settlement of the regional group. (The group took its name "Qikiqtaryungmiut" from the settlement at Pauline Cove, which was named "Qikiqtaryuk.") Additionally, because the Washout and Pauline Cove sites together contain a minimum of twenty-seven precontact and protocontact semisubterranean dwellings, and many more were probably originally present, the combined site is the largest known on the Yukon North Slope, although of course not all dwellings were occupied at the same time. Thus, as a best guess, during an average winter the site probably held a minimum of three or four occupied houses, each home to one to four nuclear families, with a possibility that it was larger during some periods.

Throughout the occupation of Washout and Pauline Cove, winter subsistence was probably based largely on ringed seals, with other taxa, particularly fish (especially whitefish and cisco) and whales varying in importance over time. As outlined in this chapter, all five contexts contain relatively high frequencies of seal bones, and given that seals are relatively large-bodied animals it is clear that they were a critical resource. Other common mammals in most contexts include fox, which—because of their small body size—were probably more important for skins than food, and caribou, which are likely underrepresented because they were mainly hunted on the mainland and perhaps transported to Pauline Cove only after culling most bones. Other fish, mammal, and bird taxa added to diet diversity and may have provided a safety net if the more important species could not be obtained.

7

The Qikiqtaryungmiut World-System in the Autonomous Zone

THE INUVIALUIT POPULATION OF HERSCHEL ISLAND was located in the autonomous zone of the European world-economy from its initial occupation by early Thule people to about 1800 AD. It is hypothesized that during this period the region was part of a world-system with relatively low breadth and depth. Following are evaluations of the expectations outlined in Chapter 5. In a number of cases, the appropriate data with which to evaluate these expectations were not recovered through the excavations on Herschel Island. Wherever possible, in this and later chapters, additional data from the regional archaeological and ethnohistoric records will be employed in evaluating the expectations. This discussion will emphasize the later precontact period, which is dated to approximately AD 1400 to 1800.

Breadth

1. Autonomous Zone Expectations—Breadth

World-system breadth should be relatively low, although regular interaction should be maintained between neighboring regional groups.

1a. Interaction with neighboring regional groups should be evident in parallel development of artifact types.

Throughout the precontact period, contemporaneous shifts are observable within material culture produced by Inuvialuit and neighboring Iñupiat groups. McGhee (1974:87–93) has shown that Inuvialuit and Iñupiat of Northwest Alaska share many elements of material culture. Some categories of shared material culture originated after the initial Thule expansion, and therefore

observed similarities cannot be explained by an origin in a common ancestral population. For example, fish netting technology, as evident in net sinkers, net floats, and net gauges, is absent in the earlier Thule components at Nelson River (Arnold 1986a), Washout (Yorga 1980), and Booth Island (Morrison 1990a). In the Barrow region of North Alaska, netting technology is also absent in earlier deposits (Ford 1959; Stanford 1976), and in the Kobuk River sequence, netting technology is rare and lacks certain key implements, including net gauges, before about 1550 AD (Giddings 1952). These same technological classes, however, become common in both north Alaska (Ford 1959:109–111; Giddings 1952:40–42) and in the Kitigaaryuit sequence on the East Channel (McGhee 1974:56–57) during the late precontact period.

Examples of stylistic changes that occurred in both Alaska and the Mackenzie Delta region also exist. Labret forms in both regions included elongated medial labrets, "hat-shaped" labrets, cylindrical plugs, and constricted plug-shaped labrets (Dumond 2009; Ford 1959; Giddings 1952; Hall and Fullerton 1990a; Mathiassen 1930; McGhee 1974). Likewise, both regions see shifts in arrowhead tang forms from conical or knobbed tangs in early Thule contexts (Stanford 1976:110; Yorga 1980:76) to a wider variety of forms in later precontact assemblages, including spurred and ringed tang forms, with a predominance of squared shoulders (McGhee 1974; Morrison 1990a; Stanford 1976). All these artifact forms are seen in late precontact contexts on Herschel Island at the sites of Washout, Pauline Cove, and Avadlek Spit (Friesen 1991, 1992b, 1993; Friesen and Hunston 1994), as would be expected for a regional group located between the Mackenzie Delta and northern Alaska. These and other commonalities are most parsimoniously explained by regular and continuous interaction between these two regions, probably along a chain of coastal regional groups, of which the Qikiqtaryungmiut were one.

To the east of the Inuvialuit region, a territory historically occupied by Copper Inuit, no specific similarities in artifact typologies that indicate contact are seen in the post-Thule period (McGhee 1974; Morrison 1990a:108), although a low level of interaction probably occurred, as indicated by trade (see the next subsection). The sporadic nature of this contact probably resulted from the fact that the coast between Cape Parry and Coronation Gulf was abandoned by around 1400 to 1500 AD (Morrison 1991a). In fact, the entire Copper Inuit area appears to have been severely depopulated shortly thereafter (Gordon 1994; McGhee 1972; Morrison 1983).

Interaction with Dene to the south of Herschel Island is not evident in terms of specific artifact styles. Morlan (1973) pointed to a number of similarities between specific implements in the late precontact Klo-kut site, which is directly ancestral to contact period Vunta Gwich'in occupations of the Old

Crow area, and in Iñupiat assemblages from western Alaska. However, the similarities between these two traditions have since been shown to be relatively insignificant (Le Blanc 1984; Morrison 1986). Artifact styles indicate there was probably a relatively marked cultural barrier between the two populations during the precontact period.

1b. Trade goods should originate in a limited number of regions.

Before discussing precontact trade, it is important to define which materials are considered indicative of trade between, as opposed to within, regional groups. In the Mackenzie Delta region, iron, copper, soapstone, and nephrite do not occur locally and therefore must be traded in. Walrus ivory is a special case in that the Beaufort Sea is beyond the normal range of walrus but individuals from the Pacific population are occasionally observed here (Harington 1966). However, the very low number of sightings and their wide geographic distribution indicate it is unlikely that they were hunted and killed with prerifle technologies, except in unusual circumstances. Therefore, walrus ivory is considered for present purposes to be a trade good originating in Alaska, where large quantities of walrus ivory were regularly obtained and worked. Materials derived from bowhead whales, on the other hand, including whalebone and baleen, are not considered trade goods for most Inuvialuit regional groups, because their territories overlap to some degree with coasts on which bowheads might have been hunted during the precontact period. This does not mean that bowhead bone artifacts were never traded (Betts 2007), simply that one cannot be sure that bowhead products were traded *between* regional groups, except in a few special cases. One of these special cases is that of the Imaryungmiut, whose territory was centered on the Eskimo Lakes and did not extend to the outer coast. For sites within this region, materials derived from bowheads are tentatively considered to have been obtained through interregional trade. Similarly, in the case of beluga whales, despite the fact that beluga whale bones have been found at some distance from locations where they were likely hunted (Friesen and Morrison 2002), in all cases it is conceivable that they were transported or traded within, rather than between, regional groups. A number of other materials, such as slate and amber, may also have been traded between regional groups; however, not enough is known of their natural distribution to allow certainty in this regard.

Washout Feature 3 contained three ivory objects. This low frequency of trade, as well as the restricted range of trade materials, may be due to small sample size, a reduced level of trade during the occupation of Feature 3, or the

presence of trade in items that are not preserved archaeologically. Pauline Cove Feature 7, on the other hand, contained abundant evidence for trade in ivory, as well as one iron, one soapstone, and three copper objects. The iron item almost certainly represents Eurasian iron and would likely have been traded from the west. No meteoritic iron has ever been found in the western Arctic (McCartney 1988:69), whereas Eurasian iron has been reaching Herschel Island for approximately eight hundred years (Yorga 1980) and Alaska for a significantly longer period (McCartney 1988). In fact, it is the presence of Eurasian iron that allows placement of this region in the autonomous zone of the world-economy rather than in the external zone.

The soapstone object must originate to the east, probably in the Coronation Gulf region, based on the fact that soapstone is not available in significant quantities to the west of this area (Morrison 1991a). Before about 1840, trade in soapstone from the Coronation Gulf region to the Mackenzie Delta region was a relatively rare occurrence (Morrison 1991a:243), although one soapstone container fragment was recovered from the eighteenth-century level M-2 at Kitigaaryuit (McGhee 1974:71), and a number of late precontact Alaskan contexts yielded a few soapstone objects (Morrison 1991a:243). The three copper objects are also interpreted to have originated in the Coronation Gulf area, whose relatively abundant copper sources have been used by Inuit since the Thule period (Morrison 1983, 1987). This inference is based on three factors. First, on the basis of macroscopic observation, none shows any evidence of having originated as sheet copper or as any part of a Euroamerican copper or brass item. Second, trace element analysis has occurred on two copper samples from the region: a Thule sample from the Washout site (Yorga 1980:101) and a late precontact sample from Atkinson Point (Franklin et al. 1981:16). Both are interpreted as having originated in the Coppermine River area. Third, the presence of a portion of a soapstone vessel in the sample indicates that some degree of trade with the Coppermine area occurred during the occupation of Pauline Cove Feature 7.

The precontact collections from Herschel Island do not contain any trade goods that originated in Dene regions to the south. This pattern is also true of other Inuvialuit artifact samples. Lithic material that originated at Vihtr'iitschik, a quarry in Dene territory located on the Mackenzie River approximately 200 km from its mouth, has been identified in Inuvialuit collections from Kitigaaryuit, Cache Point, Kuukpak, Radio Creek, and Saunaktuk, all of which are located in the East Channel or Eskimo Lakes areas (Pilon 1990b:257). However, Alexander Mackenzie reported that Inuvialuit from the Mackenzie Delta region obtained lithic raw materials from Dene territory on the lower Mackenzie River *directly* by sending "a strong party" up the river,

rather than through trade (Lamb 1970:208). There is no evidence of similar forays into Dene territory by Qikiqtaryungmiut.

1c. Aggregation sites containing evidence of occupation by more than one regional group should be rare.

Ethnohistoric information indicates that many instances of large-scale Inuit trade involved temporary camps, usually occupied in summer, in which members of a number of different regional groups came together to trade (e.g., Burch 1988). Unfortunately, evidence for such sites is entirely lacking in the archaeological record of the study area. During later periods, Barter Island was the site of an annual trade fair in which the Qikiqtaryungmiut participated. However, archaeological remains at Barter Island relate primarily to three late precontact winter villages (Jenness 1990). These sites probably represent another Inuit regional group located directly west of the Qikiqtaryungmiut but yielded no evidence of having served as centers of trade. Remains of summer sites on Barter Island are either too thin and scattered to be observed by archaeologists or else no longer exist because of erosion. Furthermore, ethnohistoric evidence indicates that Barter Island may have been less important as a trading center before about 1775 (Morrison 1991a).

Stefansson (1919:167, 172) reports that during later periods Kuukpak and Kitigaaryuit, the two largest settlements in the East Channel region, were centers of trade for all Inuvialuit regional groups. However, McGhee's (1974) excavations at Kitigaaryuit yielded a very low proportion of trade goods from precontact levels. This circumstance may be due to the fact that trade generally occurred during the summer, when the settlements would have been located on beaches that have since been destroyed by erosion. At the moment, however, no archaeological evidence exists for any precontact trading centers in the study area.

1d. Boundaries between regional groups may be indicated by stylistic differentiation of artifacts that convey social meanings.

As noted previously, stylistic boundaries and social boundaries do not always coincide, and therefore artifact style is problematic as an indicator of social boundedness (Hodder 1982). In the case of Inuit society, this problem is compounded by the fact that group identity is signaled in very few media, the most frequently occurring of which do not preserve well. Specifically, skin clothing probably served as an important signifier of group identity, with designs and cuts of parkas being highly visible ethnic markers (Burch 2005;

Chaussonnet 1988). Also potentially visible were facial tattoos and painted *umiak* or kayak paddles. All of these data classes have not survived from the precontact period in the study area in sufficient numbers or states of preservation to allow regional comparisons, although in some extraordinary circumstances they are visible in other regions (e.g., Hansen et al. 1991; Newell 1984). Labrets, on the other hand, apparently did not signal the identity of specific regional groups, as labret styles were shared over large areas.

Depth

2. Autonomous Zone Expectations—Depth

World-system depth should be relatively low, with the main purpose of interaction being the reinforcement of alliances and partnerships.

2a. Trade goods should be rare.

Precontact interaction is most clearly evident through the distribution of exchanged goods. For reasons already outlined, all traded materials and objects will be discussed in terms of technounits rather than artifacts in order to compensate for the fact that some composite artifacts contain both imported and locally derived materials. On Herschel Island, the frequency of imported technounits is calculated as 1.2 percent (3 of 247) for Washout Feature 3, and 7.5 percent (23 of 307) for Pauline Cove Feature 7. Thus, trade goods make up a small but variable proportion of the artifact samples in these two late precontact contexts.

These frequencies provide a baseline against which to compare trade good frequencies from later periods. However, they can also be compared with trade good frequencies from roughly contemporaneous sites in order to assess their representativeness. Four other late precontact contexts in the Mackenzie Delta region yielded samples that were collected in a systematic manner and that can therefore be compared, at least in a general way, to those from Herschel Island. (See Table 16.) The relatively large collections from late precontact levels at Kitigaaryuit (levels M-2, M-3, M-4a, M-4, and OH) contained a maximum of 1.4 percent trade goods (10 of more than 701) as a proportion of all technounits (McGhee 1974). These numbers are not precisely comparable to those from Herschel Island, because debitage frequencies are not reported by level, and sediments were not screened. Saunaktuk, a precontact site in the Eskimo Lakes, contained 4.0 percent (18 of 447) trade goods (Arnold 1990). This number includes baleen and whalebone technounits likely traded from

Table 16. Trade Good Frequencies from Late Precontact Sites in the Mackenzie Delta Region

Context	Copper	Iron	Soapstone	Nephrite	Ivory	Whale-bone[1]	Baleen[1]	Trade Technounits	Total Technounits	% Trade Technounits
Washout Feature 3					3			3	247	1.2
Pauline Cove Feature 7	3	1	1		18			23	307	7.5
Kitigaaryuit M2-M4, OH		1	3		6			10	>701	<1.4
Saunaktuk				1		4	13	18	447	4.0
Iglulualuit	7				3			10	>331	<3.0
Trail River								0	718	0.0

Table by author; some data presented in Friesen (in press b).

1. Baleen and whalebone are considered interregional trade materials only in the Eskimo Lakes region.

adjacent regional groups with access to bowhead whales, rather than directly procured. However, these materials do not represent trade at great distances as indicated by materials such as soapstone, copper, and ivory. Iglulualuit contained a maximum of 3.0 percent (10 of more than 331) trade goods (Morrison 1990a), although it should be pointed out that this number does not include undiagnostic artifacts and debitage that were not published, and also that the total number of artifacts is somewhat inflated over that of other sites by the presence of ninety pottery sherds. Finally, the Trail River site contained no trade goods (Nagy 1990). Late precontact sites located immediately to the west of Herschel Island have not been excavated or reported in a manner that allows their direct comparison to these samples, although no definite trade goods were reported from Barter Island (Mathiassen 1930) or from Pingok Island (Hall 1981; Irving n.d.). To the south, late precontact contexts in the Klo-kut (Morlan 1973) and Rat Indian Creek (Le Blanc 1984) sites have yielded very small proportions of trade goods in the form of copper and obsidian; these materials have been linked to trade with southern Alaska or southern Yukon (Le Blanc 1984:389).

2b. Trade goods should occur in relatively few functional categories.

Washout Feature 3 contained three imported technounits, all of ivory. One was unidentified, and so two functional categories are represented: an ivory float nozzle, associated with sea mammal hunting, and an ivory pendant, probably worn as an ornament or amulet.

Pauline Cove Feature 7 contained twenty-three traded technounits across twelve functional categories (disregarding unidentified objects), indicating the integration of externally derived materials into a number of different activities. General categories of activities that saw the use of imported materials include sea mammal hunting (an ivory harpoon foreshaft and an ivory drag line handle); fishing (three ivory fish hook shanks and a copper fish hook barb); manufacturing activities (a copper knife handle rivet, one copper and one iron graver bit); sewing (an ivory thimble holder and needle case plug); heating or cooking (a soapstone lamp fragment); and functions relating to ornament or ideology (an ivory carving of a walrus).

The functions of trade goods from Herschel Island and other late precontact contexts in the region are presented in Table 17. With the exception of the Trail Creek site (not included in Table 17 because of the absence of imported items), each site contains a variety of functional categories. Of note is the fact that most of these artifacts have some technological or subsistence function,

Table 17. Functional Categories of Late Precontact Trade Technounits in the Mackenzie Delta Region

Washout Feature 3
1 ivory float nozzle
1 ivory pendant
1 ivory worked fragment

Pauline Cove Feature 7
1 ivory harpoon foreshaft
1 ivory drag line handle
2 ivory inlaid eyes for drag line handle
3 ivory fish hook shanks
1 copper fish hook barb
1 copper knife handle rivet
1 copper graver bit
1 iron graver bit (?)
1 ivory thimble holder
1 ivory needle case plug
1 soapstone lamp fragment
1 ivory walrus carving
8 ivory worked fragments

Kitigaaryuit Levels M2, M3, M4a, M4, OH
2 soapstone fish hook sinkers
1 iron blade for side-bladed knife
1 soapstone container fragment
1 ivory harpoon head
4 ivory float nozzles
1 ivory fish hook shank

Saunaktuk
1 nephrite adze blade fragment
5 baleen net or other knotted fragment
2 baleen cord fragments attached to bucket handle
4 baleen cords used in construction of wooden bowls
2 baleen worked fragments
4 whalebone sled shoe fragments

Iglulualuit
3 copper inlays in fish hook shank
1 copper fish hook barb
1 copper engraving blade
2 copper rivets in engraving tool
1 ivory drill socket
2 ivory pendants

Table by author; see text for sources.

with only the ivory pendants from Iglulualuit and Washout—and possibly the ivory walrus carving from Pauline Cove—potentially relating to display of social status or prestige. Of course, ownership of "functional" items made of imported materials, such as a copper fish hook or an ivory thimble holder, may have conferred some prestige, but this was not their only purpose. This contrasts with the early Thule artifact sample from Washout Feature 1 (which predates the period under discussion here), which contained two bracelets containing copper beads and five ivory pendants or clothing ornaments (Yorga 1980:122–124), apparently indicating a greater emphasis on the display of wealth or prestige during this earlier period.

2c. Trade goods should not fully replace locally produced technology in any functional category.

Although many of the traded items in the Washout Feature 3 and Pauline Cove Feature 7 assemblages probably represent a technological advantage over locally available materials, any could be replaced if the trade goods were not available. The copper fish hook barb could be replaced by bone, as often occurred throughout the Mackenzie Delta region on fish hooks ranging in size from large to very small (Arnold 1990:68). The copper and iron engraving tool bits could be replaced by sharpened animal teeth or stone, as is evident in the Washout Feature 3 and Pauline Cove Feature 7 assemblages (see Tables 5 and 8). The copper rivet in the knife handle could be replaced by an antler counterpart. Finally, the soapstone lamp could be replaced by lamps manufactured of inferior local stone types, as is evident in the second lamp fragment from Pauline Cove Feature 7.

2d. Trade in bulk goods should be absent or rare.

There is no evidence for trade in bulk goods at any precontact sites on Herschel Island or in the Mackenzie Delta region. As discussed above, trade in bulk subsistence goods is particularly difficult to determine from the archaeological record as a result of the fact that they tend to be organic materials particularly subject to rapid decomposition, such as meat, oil, or skins. At a later period, in the early nineteenth century, Franklin (1828:130) reported that Inuvialuit of Herschel Island *exported* some bulk goods, including sealskins and oil, but only *imported* preciosities such as iron, knives, and beads. However, the archaeological record is mute on this pattern, so its time depth currently cannot be estimated (Friesen in press a).

2e. Efforts to acquire imported trade goods should not noticeably affect the subsistence-settlement pattern, which should continue to be based on the distribution of locally available exploited subsistence resources.

The settlement pattern of the late precontact Qikiqtaryungmiut cannot be fully reconstructed on the basis of known site distributions. Because of coastal erosion, incomplete survey, and a lack of excavation of late precontact components, the subsistence-settlement system must be interpreted primarily on the basis of the two features described in this chapter. One other aspect of the settlement pattern, however, is represented by two warm-season caribou-hunting sites at Trail River (Nagy 1990) and Engigstciak (MacNeish 1956b), located to take advantage of the summer range of the Porcupine caribou herd. An additional possible warm-season occupation is represented by Feature 4 at the Washout site, a feature of unknown age and function that produced a large proportion of fish bones but few seal bones (Friesen and Hunston 1994).

Washout Feature 3 and Pauline Cove Feature 7 are both sod houses that would have been occupied in the winter. Occupation during other seasons is possible (Nagy 1994a) but cannot be substantiated on the basis of architectural details. The zooarchaeological samples, however, provide further information. (See Tables 6 and 9.) At the most basic level, the two samples contrast with one another in terms of relative importance of different zoological classes. In Washout Feature 3, mammals make up 73.6 percent of NISPs, with fish contributing 25.5 percent and birds only 0.9 percent. In Pauline Cove Feature 7, on the other hand, fish contribute 69.3 percent of NISPs, whereas mammals contribute 29.9 percent and birds only 0.8 percent.

In terms of seasonality, the various seal species probably represent the only significant resource available through the entire winter, when they could have been hunted at breathing holes, or at the open leads that may occur throughout much of the winter in the Herschel Island area because of unstable ice conditions (Cooper 1974; Kovacs and Mellor 1974). Seals are also available at leads during spring and autumn (Nuligak 1966:91; Stefansson 1919:186). The probability of floe-edge or lead hunting contributing to the late precontact faunal samples is suggested by the age profiles of the small seal samples, which contain a majority of immature individuals (14 of 22 MNI, or 63.6 percent at Washout; 4 of 6 MNI, or 66.7 percent at Pauline Cove). Immature ringed seals tend to congregate at leads or floe edges during the winter (Mansfield 1967; Stirling et al. 1975). Seals appear to have been a critical resource in Washout Feature 3, where they contributed 88.6 percent of the numerically dominant mammal category, but were somewhat less important at Pauline Cove Feature 7,

where they contributed only 49.8 percent of the mammal category, which itself represented a much lower proportion of the overall faunal sample.

The only other significant taxa that could have been regularly obtained in winter are fox, fish, and ptarmigan. Fox was probably not a major source of food, although skins may have been important for clothing or trade. Fish, however, have been suggested by Yorga (1980:35) as a potential winter resource, obtained through netting or jigging. However, there is very little evidence of this in the ethnographic record. Inuvialuit elders who lived along the Yukon coast during the first half of the twentieth century practiced winter fishing only at inland locations (Nagy 1994b:78), and the only winter fishing engaged in by Nuligak (1966:93) in this area occurred up the Firth River, again on the mainland. A difficulty in interpretation of fish in the faunal samples presented here is that the species of most could not be identified. Only three species were identified: arctic char, inconnu, and burbot. Arctic char and inconnu are both anadromous, and they are most effectively fished in the fall during spawning runs (Martell et al. 1984:165, 169). Burbot, on the other hand, is the only winter-spawning fish in the region; however, a combined total of only nine burbot bones was recovered from the two late precontact features on Herschel Island, and because this species is largely confined to fresh water (Scott and Crossman 1973:643), they probably were not fished near Pauline Cove. In both samples, most of the remaining fish have been identified only to a more general category consisting of whitefish, cisco, and broad whitefish. Most of these species are either anadromous, spawning in summer or early fall, or restricted to freshwater. Therefore, it is likely that most were fished during the warm season and either stored or transported to Pauline Cove (see also Harrison 1908:116). Finally, although ptarmigan are available year-round, they are absent from the Washout Feature 3 sample and present only in trace amounts in the Pauline Cove sample.

In addition to most of the fish species, many other taxa present in the late precontact faunal assemblages are available primarily or exclusively in the spring, summer, or fall. All bird species other than ptarmigan, snowy owl, and some gull species are migratory summer residents and nest in the vicinity of the Yukon North Slope (Morrison 1988:67). Most caribou spend only the summers on the North Slope and are therefore not available during the winter, although a few may winter in the area (Martell et al. 1984:40). Finally, beluga and bowhead whales migrate west to overwinter in the Bering Sea and are therefore available only during periods of open water in the Beaufort Sea.

The question of bowhead whale hunting must be addressed in order to determine the nature of the late precontact subsistence-settlement system in the region, because regular hunting of bowheads, if it occurred, could have

supplied a large, perhaps focal proportion of the local diet because of their great size. In the late 1970s, the general consensus that bowhead whaling was widely practiced in the precontact Canadian Arctic was subject to pointed criticism (Freeman 1979; Yorga 1979); however, it has since been shown that for many Thule Inuit groups the evidence for large-scale whaling is overwhelming (McCartney 1980; McCartney and Savelle 1985, 1993; Savelle and McCartney 1990, 1991, 1994). In the present context, however, two problems arise when attempting to assess the role of bowhead hunting in the subsistence economy of Herschel Island: (1) unlike in the eastern Arctic, driftwood was plentiful, and therefore whale bones do not usually occur in the archaeological record as architectural elements; and (2) occasional scavenging of whale carcasses is known from the later ethnographic record of the area; thus whale bones cannot automatically be assumed to have been derived from hunted animals (Jenness 1957:29).

In the two faunal samples analyzed here, bowhead whale is represented by only one bone fragment from Washout, but by seventeen specimens at Pauline Cove. In both instances, the artifact samples contain additional implements manufactured of bowhead bone or baleen, although baleen occurs more frequently at Pauline Cove Feature 7. The Pauline Cove Feature 7 bowhead sample consists of one humerus, one ulna, three vertebral fragments, one unidentified fragment, and eleven phalanges, with 88.2 percent (15 of 17) showing clear cut marks. These bones can be considered circumstantial evidence for bowhead hunting for at least three reasons. First, the presence of many phalanges indicates that these are not bones brought back to the house for architectural purposes (Savelle 1997). Second, the high frequency of cut-marked bones probably indicates that these bones were stripped of their flesh for use as food. Third, the preponderance of limb bones and, especially, phalanges reduces the likelihood that these bones come from a scavenged carcass. According to Inuvialuit informants, exterior portions of a whale carcass are the first to spoil and therefore might be avoided when drift carcasses were scavenged (Nagy 1994b:34).

In summary, the two late precontact faunal samples are extremely different from one another, arguing against a homogeneous local economy throughout the later precontact period. Washout shows an overwhelming reliance on seals, with relatively few other important resources. Pauline Cove contains, in addition to seals, large quantities of fish bones, as well as probable evidence for bowhead whale hunting. Reasons for these differences are not straightforward. One possibility is that the Washout site represents a shorter-term occupation restricted to the winter, whereas the Pauline Cove occupation incorporated more stored food and, possibly, a greater degree of sedentism with a longer

period spent in the sod house. Both faunal assemblages are consistent with a subsistence system based on locally available resources.

2f. Efforts to acquire products for exchange, such as furs or sea mammal oil, should not noticeably affect the subsistence-settlement pattern.

This suggestion cannot be fully addressed given the archaeological invisibility of many potential exports (e.g., sealskin pokes full of sea mammal oil), as well as our lack of information concerning the complete annual subsistence-settlement pattern. However, it can be noted from Tables 6 and 9 that the various potential fur-bearers (muskrat, wolf, arctic fox, red fox, and wolverine) represent 4.1 percent (68/1663) of NISPs within the mammal sample from Washout, and 9.5 percent (146/1536) of the mammals from Pauline Cove. These frequencies provide a baseline against which to compare faunal samples from later periods.

2g. Evidence for interregional conflict may exist in the form of slat armor, weapons, or incised images.

Direct evidence for conflict is expected to be rare or equivocal in the archaeological record. Some categories of material evidence for conflict and warfare have never been reported from the Mackenzie Delta region, including defensive structures, slat armor, and incised images depicting conflict. However, two artifact categories likely relate to conflict. First are bone daggers, which were reported ethnographically to have been used in interpersonal conflict, though not necessarily at an interregional scale. As mentioned previously, one bone dagger was recovered from Washout Feature 3, and two more daggers were recovered from later precontact levels at Kitigaaryuit (McGhee 1974). More remarkable is the presence of a "war club" from the late precontact site of Kuukpak on the East Channel (Arnold and Pokiak 2011:25). This large whalebone club has a serrated edge with multiple sharp projections and precisely matches Rasmussen's (1933:307) description of Alaskan war clubs as "great saw-toothed clubs designed to crush the skull of the enemy." This weapon seems ill suited to anything less than interregional warfare and thus stands as a strong indication that conflict existed in the precontact period. Finally, an even more unequivocal indicator of interregional conflict was found at the site of Saunaktuk (Arnold 1990). Here, the skeletal remains of at least thirty-five Inuvialuit men, women, and children were found in a concentrated deposit, indicating violent death (Melbye and Fairgrieve 1994) and conforming closely to the pattern of intergroup warfare described by Burch (2005) for

Alaska. It is unclear whether this particular conflict was between Inuvialuit regional groups, or between Inuvialuit and neighboring Dene (Arnold 1990). However, this site does dramatically indicate the precontact presence of intergroup conflict.

Internal Differentiation

3. Autonomous Zone Expectations—Internal Differentiation

Internal differentiation may occur if regionally variable concentrations of exploited subsistence resources exist. On the basis of extrapolation from the ethnographic record, and the known distribution of major subsistence resources, the East Channel is expected to form a core region.

3a. Significant differences should exist in the density of available resources between the East Channel and Herschel Island regions.

On the basis of the previous discussion, the late precontact Qikiqtaryungmiut are considered to have subsisted on a diet primarily composed of seals and fish, supplemented by seasonally available caribou, migratory birds, and, during some occupations, whales. Although occupants of Pauline Cove Feature 7 may have successfully exploited bowhead or beluga whales, or both, it is not clear that Pauline Cove was optimally situated for the acquisition of either species, and it seems unlikely that the settlement was large enough to raise multiple whaling crews. Thus, these whale species may have been important when obtained, but they were probably not a reliable or constant food source. Furthermore, to the degree that winter subsistence derived from seal hunting, seal populations in the Herschel Island area would have been a finite resource. Therefore, the faunal samples are consistent with a subsistence base that was dependable but not necessarily rich.

To the west of Herschel Island, the closest late precontact occupations are represented by three large sites at Barter Island (Jenness 1990, 1991). Jenness (1991) excavated seventy-six houses at the three sites in 1914; however, faunal remains were not collected, and most aspects of these excavations remain unpublished. Thus, subsistence patterns cannot be fully reconstructed. However, several of the houses were surrounded by bowhead whale skulls, indicating that bowhead hunting probably formed a part of the subsistence pattern for at least a portion of the Barter Island occupations. The next significant cluster of late precontact sites west of Barter Island is located in the vicinity of Barrow, approximately 600 km from Herschel Island (Ford 1959; Hall and Fullerton

1990a, 1990b, 1990c; Jensen 2009). Here, bowhead hunting reached a peak, with whales hunted regularly during the spring migration at ice leads.

To the east, the East Channel provided a dependable and plentiful resource in the form of beluga whales. On the basis of identifications made during excavations at Kitigaaryuit, McGhee (1974) confirmed that beluga whales were exploited in large numbers during the precontact period. Using NISPs, for the precontact levels M-2, M-4, and OH, beluga bones constituted between 79 and 81 percent of all bones of all species, although a lack of screening no doubt inflates this percentage. At Kuukpak, another large site on the East Channel of the Mackenzie River (Friesen and Arnold 1995a, 1995b), in a large sample screened through 6-mm mesh, beluga whale bones made up 19.3 percent (2,266 of 11,714 NISP) of the total sample. Given the large size of individual belugas, meat weight calculations indicated that beluga whales probably provided over half of all available meat from the site (Friesen and Arnold 1995b), and studies of growth layers in beluga mandibles confirmed that efficient communal-drive hunting techniques were used at the site during the precontact period (Friesen and Arnold 1995a). In addition to beluga whales, people of the East Channel subsisted on a great diversity of bird, fish, and mammal species (Balkwill and Rick 1994; Friesen and Arnold 1995b).

East of Kitigaaryuit, regional groups relied to varying degrees on fish, seals, caribou, and bowhead whales (Alunik et al. 2003; Betts 2008; McGhee 1974:16–18; Morrison 1988, 1990a; Morrison and Arnold 1994), with bowhead whales constituting an important resource at Atkinson Point and Cape Bathurst. In 1826, Richardson (1828:215–217) visited Atkinson Point, reporting a settlement consisting of seventeen houses, with a *karigi* surrounded by twenty-one whale skulls. Richardson (1851:257) visited the site again in 1848, at which time he was informed that whales were hunted each autumn. M'Clure (1856:87) was later informed that three whales had been killed in the area during the summer of 1850. This strongly suggests the presence of productive bowhead whale hunting, despite the fact that by the late nineteenth century bowheads were no longer successfully hunted there (Stefansson 1919:350). Bowhead whales were also hunted at Cape Bathurst (Armstrong 1857:176; MacFarlane 1905), where Richardson (1851:267) reported that "in some summers they kill two black whales, very rarely three, and sometimes they are altogether unsuccessful." Bowhead whaling was probably never as successful at these sites as it was in Northwest Alaska, because bowhead movements were tightly constrained by ice leads in the latter area. However, it seems likely that Atkinson Point and Cape Bathurst saw successful precontact bowhead whale hunting, and that the mass slaughter of bowheads begun in 1848 in Bering Strait had rapid and major negative effects on this hunt. Unfortunately,

both sites have now been lost to erosion, so it may never be possible to confirm the importance of bowhead hunting in the precontact period, though Betts's (2007) work at the McKinley Bay site, near Atkinson Point, is yielding relevant information from a related, if smaller, bowhead hunting site.

In summary, though faunal remains are subject to many complexities relating to taphonomic factors, recovery methods, and differential visibility of different species, the archaeological record is consistent with the Yukon North Slope and its resident Qiktaryungmiut peoples having access to a somewhat less dense and reliable resource base than many of their neighbors to the west and east.

3b. Core groups should have a greater population density.

Population density at precontact sites is difficult to address because of imperfect preservation, difficulties in estimating numbers of people per household, and problems in assessing the degree of contemporaneity of features at a given site or at multiple sites in a given region (Hassan 1975). For the study area, fine-grained analyses of intrasite variability that might bear on this question have not yet been performed, and only one or two houses have been excavated at many larger sites such as Iglulualuit (Morrison 1990a) and Kitigaaryuit (McGhee 1974). Therefore, for present purposes, discussion of population sizes must remain relative and very general.

The pattern observed on Herschel Island is consistent with one of a small residential group of several contemporaneously occupied houses, though this must remain speculative. At the Washout site, even though a minimum of nine sod houses were present at the site prior to erosion, they were occupied during at least three different periods (Friesen and Hunston 1994). Three additional precontact houses have been excavated at the main site at Pauline Cove (Features 2, 5, and 7), but large-scale test excavations have yielded only three further possible precontact dwellings (Features 3, 4, and 9). In addition, several clusters consisting of one to three houses were recorded between the main areas of the Pauline Cove and Washout sites. (See Figure 8.) These houses are assumed to be late precontact in age, an assumption that could not be fully tested because of the fact that they are either heavily eroded or waterlogged. The large gaps separating the clusters probably indicates that they were not occupied contemporaneously. All well-preserved precontact houses in Pauline Cove contain two alcoves and were probably intended for between two and four nuclear families.

To the west, the large sites at Barter Island remain enigmatic. Together, approximately 133 houses were recorded by Jenness (1990), most of which appear to have been smaller rectangles in form, perhaps housing a single family.

Hall (1987, cited in Jenness 1990), who reanalyzed the collections excavated by Jenness, concluded that most or all of the Barter Island houses were occupied early in the late precontact period, around 1500 AD. However, at least a few earlier and later occupations are represented by a single Thule 2 harpoon head (Mathiassen 1930:21) and the presence of "many modern" artifacts in the collection, apparently indicating occupation of parts of the site into the nineteenth century (Jenness 1990:101). Clearly, the Barter Island sites must have been occupied by a relatively large population, but beyond that general statement, this occupation remains poorly understood.

East of Herschel Island, a number of relatively large sites have been recorded on the East Channel of the Mackenzie River. The earliest large site, estimated to date mainly to the fourteenth century AD, is Cache Point, which contains the remains of a minimum of twenty-three small rectangular sod houses (Friesen 2009a). Later sites include the Pond site, which contained a minimum of seven houses, and the later precontact Kuukpak site, which contained a minimum of twenty-one houses (Arnold 1994a:89). Four of the five excavated houses at Kuukpak are of the very large cruciform variety, containing three alcoves. Kitigaaryuit contained a minimum of twelve house mounds, of which at least eight were cruciform (McGhee 1974:26). As mentioned previously, Atkinson Point contained at least seventeen houses in 1826, of which some were cruciform (Richardson 1828:215). Cruciform houses probably held an average of six families (Stefansson 1919:166). Therefore, sites that held multiple cruciform houses were inhabited by relatively large populations.

For most of these sites the number of contemporaneously occupied structures cannot be determined; however, the large sites and dwellings to the east and west likely correlate with larger coresident groups than did those on Herschel Island. It is also important to reemphasize the fact that these surviving winter sites are not usually indicative of activities during other seasons; this is particularly the case for the East Channel peoples in the vicinity of Kuukpak and Kitigaaryuit, for whom the summer saw by far the largest aggregations of people in pursuit of beluga whales, in the protocontact period. This seems likely during the precontact era also, given the clear evidence for a major precontact beluga hunt (Friesen and Arnold 1995a, 1995b). Thus, the presumed maximum populations in the region are simply not visible archaeologically but are likely substantially larger than that at Herschel Island.

3c. Core groups should exhibit a greater degree of social complexity.

A number of very general archaeological correlates of social complexity were suggested in Chapter 3, though not all are applicable here. For example,

definite precontact burials have not been excavated on the Yukon North Slope, although some imprecisely described burials that may be precontact have been reported from an area near the boundary between the Qikiqtaryungmiut and East Channel regional groups (Osborne 1952). Therefore, they cannot be compared to the rare excavated examples of graves known from neighboring regions (e.g., Gordon 1971).

However, frequencies of preciosities, display or ornamental artifacts, and intrasite architectural variability can be addressed in an initial form. As outlined earlier, the frequency of imported artifacts is lower at the East Channel site of Kitigaaryuit than in surrounding regions. (See Table 16.) This observation may result in part from the fact that the Kitigaaryuit excavations did not employ screens, and therefore some imported goods may have been overlooked. In particular, small copper or iron objects such as fish hooks or rivets are very difficult to recover because of their size and color. In addition, the late precontact collections from Kitigaaryuit are largely derived from midden deposits (McGhee 1974:34), whereas excavations at other sites in the region occurred in houses. Valuable trade goods would more likely be lost in a house than intentionally discarded in a midden (Schiffer 1987:76–79). Despite these observations, the low frequency of trade goods at Kitigaaryuit runs counter to the expectation that a more socially complex regional group would import larger frequencies of preciosities.

Frequencies of artifacts that serve as ornaments and therefore potential displays for social status also do not follow expectations. At Kitigaaryuit, labrets, beads, pendants, combs, and bodkins combined constitute a maximum of 1.9 percent of the artifact sample (13 of more than 701), whereas at Herschel Island they constitute 3.2 percent (8 of 247) and 2.0 percent (6 of 307) of the Washout and Pauline Cove samples, respectively. Although this artifact class may be subject to the same biasing factors as outlined for preciosities, it again runs counter to expectations. A final artifactual indicator of social activity is the presence of drum parts, because drums were used exclusively in community dances. A greater frequency of drum parts does not directly indicate a greater degree of social complexity, but it would potentially indicate a greater intensity of communal activities of a sort that were prominent during complex social interactions, and it is thus at least indirectly linked to social complexity. The Pauline Cove and Washout samples contained lower frequencies of drum parts, at 0.0 percent (0 of 307) and 0.8 percent (2 of 247) of the sample, respectively, than did the Kitigaaryuit sample, which contained a maximum of 1.9 percent (13 of more than 701) drum fragments. Artifact frequencies are not available for sites immediately west of Herschel Island, such as Barter Island.

A final category of data that can be linked at least indirectly to social complexity is the nature of site architecture. The late precontact houses on Herschel Island and on the East Channel share a number of similarities. In both instances, driftwood was the primary construction material, and the architecture was based around a central room containing four corner posts, from which a variable number of alcoves projected from the walls. On Herschel Island, only one house type occurred in the late precontact period, namely a relatively small two-alcove house with a short entrance passage (Friesen 2006). In the East Channel region, houses are significantly more complex, with later sites containing very large cruciform houses (Arnold 1994a; Arnold and Hart 1992; McGhee 1974). At Kuukpak, a second type of semisubterranean structure was recovered. It was rectangular in form and contained no sleeping benches (Arnold 1994a:89), and was probably a *karigi*. Although houses at Barter Island have not been fully described in the literature, most appear to have been relatively small and rectangular, with a single rear sleeping platform, although a few had side alcoves (Jenness 1990:96). In addition, at least two structures interpreted as *karigis* were excavated.

Table 18. Summary of Expectations for the Autonomous Zone

Expectation	Archaeological Data	Ethnohistoric Data
1. Breadth should be relatively low.		
1a. Parallel development of artifact types	+	
1b. Trade goods from few regions	+	
1c. Aggregation sites rare	N/A	+/−
1d. Intergroup boundaries maintained	+/−	
2. Depth should be relatively low.		
2a. Trade goods rare	+/−	
2b. Trade goods in few functional classes	+/−	
2c. Trade goods do not replace local technologies	+	
2d. Trade in bulk goods rare	N/A	
2e. Subsistence based on local resources	+	
2f. Limited acquisition of products for export	N/A	
2g. Evidence for conflict present	+	
3. Internal differentiation occurs, with Mackenzie Delta as core.		
3a. Differential resource densities	+	
3b. Core has greater population density	+	
3c. Core groups more socially complex	+/−	

Table by author.
Note: N/A = no data; + = supported; − = negated; + / − = equivocal or contradictory data.

Summary

Most expectations for the autonomous zone were met, to some degree, by the data. (See Table 18.)

Because Herschel Island was in the autonomous zone of the European world-economy during the late precontact period, archaeological data were used to evaluate all expectations. Ethnohistoric data were also used in one case, in which the Inuvialuit of Herschel Island gave Franklin (1828) information regarding the origin of trade at Barter Island. A final summary of the nature of the Qikiqtaryungmiut world-system during this period will be presented in Chapter 10.

8

The Qikiqtaryungmiut World-System in the Contact Periphery

AFTER APPROXIMATELY 1800 AD, Herschel Island entered the contact periphery of the European world-economy, where it would remain until 1889. Throughout this time range, which is also referred to as the protocontact period, an increased availability of trade goods is expected to affect the indigenous world-system, resulting in greater breadth and depth. Furthermore, after about 1850 AD, reduced bowhead whale populations may have had a further impact on the local world-system by altering settlement patterns and reducing population density in regional groups that relied to a significant degree on bowheads. On Herschel Island, the protocontact period is represented by Pauline Cove Feature 1, which was occupied late in this period, just before the arrival of whalers in 1889.

Breadth

4. Contact Periphery Expectations—Breadth

World-system breadth should increase, as seen in interaction with a greater number of regional groups, including to the west (Iñupiat), south (Gwich'in), and east (Inuvialuit regional groups and, beyond them, the Copper Inuit).

4a. Trade goods should originate in a greater number of regions.

In the Pauline Cove Feature 1 artifact sample, a greater variety of trade goods is present than was the case in the previous period. However, assigning a definite region of origin to many of them is not possible, because similar trade goods were often available from both the Hudson's Bay Company posts to the

east and from Russian traders, and later whalers, to the west. Table 19 lists all trade goods and their probable sources.

Most of the firearms-related artifacts cannot be sourced with certainty. All are associated with three calibers of breech-loading repeating rifles: Henry .44 caliber rimfire, 44-40, and 45-70. The Henry .44 caliber cartridges were probably traded from Northwest Alaska: They have been reported from Utqiagvik in northwestern Alaska (Cargill and Smith 1990:395), but not from any sites south or east of Herschel Island. These cartridge cases bear the headstamps "H" or "P," which refer to the American ammunition manufacturers "Winchester" and "Peters," respectively (Barnes 1989:421). The other two calibers are both relatively common at Utqiagvik (Cargill and Smith 1990). In the remainder of the Mackenzie Delta region, only Kitigaaryuit contained deposits

Table 19. Trade Goods from Feature 1, Pauline Cove

Type	*n*	Probable Source		
		East / South	West	Unknown
Bullet, .44	2			x
Cartridge case, 44 rimfire	6		x	
Cartridge case, 44–40	12		x	
Cartridge case, 45–70	11		x	
Gunpowder flask	2			x
Percussion caps box lid	1		x	
Nail, square	1			x
Thimble, metal	2			x
Bottle fragment, glass	3			x
Button, brass	1		x	
Bead, glass				
C. d'A–red on white	48	x		
C. d'A–red on brown/black	11	x		
Seed–blue	369			x
Seed–green	192			x
Seed–pink	6			x
Seed–red	3			x
Seed–white	62			x
Seed–other	100			x
Blue, facetted	2			x
Other	28			x
Pipe lid	1			x
Miscellaneous, iron	5			x
Miscellaneous, brass	1			x
Miscellaneous, soapstone	1	x		
Miscellaneous, ivory	10		x	

Table by author.

that date to a period that may have contained these cartridge types. Kitigaaryuit yielded one 45-70 cartridge case. South of the Yukon North Slope, protocontact Gwich'in sites have yielded both 45-70 and 44-40 cartridge cases (Le Blanc 1984; Morlan 1972). Five of the 45-70 cartridges from Pauline Cove Feature 1 bear the headstamp "R L," with a date, indicating their manufacture by the United States Cartridge Co. (Barnes 1989:421). All the 44-40 cartridges were manufactured by Winchester, and a percussion caps box lid that retained part of a paper cover retains the word "Conn.," short for "Connecticut," indicating an American manufacturer. In general, then, these artifacts point to an Alaskan origin to the west, with access to American suppliers. However, the possibility that some may have come from trading posts to the east or south cannot be ruled out, as the Hudson's Bay Company is reported to have begun trading in British and American breech-loading rifles after 1870 (Gooding 1951:31).

Most of the other Euroamerican trade goods are also difficult to source with certainty. Glass beads were a common trade good with all trading companies. However, it has been suggested that seed beads were associated most strongly with the Hudson's Bay Company (Cargill and Smith 1990:390), and that Cornaline d'Aleppo beads, which in the Herschel Island samples have a red exterior and an interior of white, brown, or black, were also generally associated with it (Morlan 1972:70). The single brass button bears an eagle-and-shield design, indicating an American origin. Finally, two traded materials were not derived ultimately from Euroamerican sources: a single soapstone nodule, which represents trade to the east with an origin in the Coronation Gulf region, and ten ivory objects that represent trade with Alaska.

In summary, one artifact indicates definite trade to the east (the soapstone nodule), whereas several point to probable trade to both west (firearms-related artifacts, brass button, ivory items) and east or south (Cornaline d'Aleppo beads, possibly seed beads). This last category, consisting of artifacts likely traded from the Hudson's Bay Company, is considered to have been traded either from Inuvialuit groups to the east on the East Channel or from Gwich'in. By 1826, trade had been established between Qikiqtaryungmiut and Gwich'in, who descended the Firth River each summer (Franklin 1828:130). Although Franklin describes this trade as of secondary importance to the trade with Alaskan Iñupiat, it was important enough for the Gwich'in to attempt to attack Franklin's boats in order to reduce competition for the trade (Franklin 1828:177). During later decades of the protocontact period, ethnohistoric sources indicate continued trade between Qikiqtaryungmiut and Gwich'in at Herschel Island (Simpson 1845:119; Simpson 1988:543) and Barter Island (Collinson 1875, cited in McGhee 1974:8).

4b. Aggregation sites containing evidence of occupation by more than one regional group should be initiated or increase in number or density of occupation.

Archaeological evidence for large-scale aggregations is again lacking for the protocontact period. Excavations at Barter Island have not yielded significant occupations dating to this period (Jenness 1990), and the protocontact levels at Kitigaaryuit are mixed with those of later periods (McGhee 1974:83). This absence of evidence is probably due to the fact that in both locations trading took place during summer in camps on the beach, which would be subject to later erosion or destruction. The remaining winter houses are not direct reflections of summer activities.

Unlike the preceding period, however, the ethnohistoric record for this period contains significant evidence for large aggregation sites occupied specifically for the purpose of trade, often located in the vicinity of dependable resource concentrations (Hickey 1979). In Alaska, a number of these sites have been described in detail, with indications that they increased in importance over the course of the nineteenth century (Bockstoce 2009). The most easterly, and therefore most important for the present study, was at Barter Island (Burch 1988, 2005). Barter Island was the site of annual trade fairs between Qikiqtaryungmiut and other Inuvialuit, Gwich'in, and Alaskan Iñupiat regional groups from both inland and coastal areas. The regular and large-scale trade fair at Barter Island can be considered to have begun sometime during the last two or three decades of the eighteenth century, according to reports by Inuvialuit in 1826 that the trade had begun within their lifetimes (Franklin 1828:130; see also Morrison 1991a:242). This trade is referred to on a number of occasions during the nineteenth century (Simpson 1845:120; Simpson 1988:528) and probably continued actively until it was completely circumvented by whalers in 1889. However, during its final decade the location may have moved to Collinson Point, located a short distance to the west (Stefansson 1919:186).

As noted previously, Stefansson (1919:172) identifies the two large East Channel communities of Kuukpak and Kitigaaryuit as trade centers during this period. Ethnohistoric evidence in the form of explorers' observations of large aggregations is consistent with this designation, but archaeological evidence is lacking.

4c. Boundary maintenance should decrease, as reflected in a reduction of stylistic differences for artifacts that convey social meanings.

As with the previous period, artifact types that convey social meanings associated with territoriality or boundaries have not survived in the archaeological record. However, the ethnohistoric record contains clear references to relatively rigid regional group boundaries, including one reference to a prominent difference in visual symbols between the Qikiqtaryungmiut and East Channel Inuvialuit. In 1826, Franklin (1828:120) reported that the Qikiqtaryungmiut and East Channel Inuvialuit had very different patterns of facial tattoos. On the East Channel, men were tattooed, whereas among the Qikiqtaryungmiut, only the women were tattooed. Unfortunately, it is not clear whether these visual indications of group affiliation became more or less common during this period than in the preceding one.

Depth

5. Contact Periphery Expectations—Depth

World-system depth should increase.

5a. Trade goods should occur in higher frequencies.

The ethnohistoric record indicates a general, steady increase in the availability of trade goods and the volume of trade during this period (e.g., Bockstoce 2009); however, only the archaeological record can indicate the frequency and precise nature of trade activity at a regional or site-specific level. The artifact sample from Pauline Cove Feature 1 contains a much higher frequency of trade goods than did either of the two precontact features from Herschel Island. (See Table 19.) In fact, fully 88.0 percent (880 of 1,000) of technounits are imported, as opposed to 1.2 percent for Washout Feature 3 and 7.5 percent for Pauline Cove Feature 7. In a number of cases, artifacts contained both imported and locally produced technounits. For example, two blunt arrowheads were each made with one imported technounit (a recycled cartridge case) and one locally produced technounit (a wood arrow shaft). Although this frequency of imported technounits is high, it should be noted that by volume they constitute a much smaller proportion of the sample. In particular, 821 of the 880 imported technounits are glass beads, mostly seed beads, which are extremely small.

The Kugaluk site, located in the Eskimo Lakes area, is the only other site in the region that has yielded a protocontact sample from an unmixed context (Morrison 1986, 1988). This site is dated to approximately 1860 AD on the

basis of trade goods (Morrison 1988:61) and is, therefore, slightly earlier than the occupation of Pauline Cove Feature 1. This site contained 13.8 percent (136 of 985) imported technounits, a significantly higher frequency than that of any late precontact site in the region, although much lower than that from Pauline Cove Feature 1. All trade goods from this site probably originate at the Hudson's Bay Company posts of Fort Anderson and Fort McPherson, with the exception of one soapstone vessel fragment and three copper rivets, which were probably obtained through trade with Inuit of the Coronation Gulf area.

5b. Trade goods should occur in a greater number of functional categories.

A number of factors may inflate the importance of imported material culture in Pauline Cove Feature 1. For example, the very small size of beads may contribute to their loss by site occupants and therefore recovery by archaeologists (Schiffer 1987; see Wilson 1991:187), and artifacts such as firearms cartridge cases may often have been used only one time before being discarded. These processes could make them appear more frequently in archaeological deposits than locally manufactured artifacts that were larger, designed to be reused many times, or both. Therefore, the number of technounit *categories* may provide a better indication of the importance of imported materials than the absolute number of technounits. In the present case, the assigned function of an object is the *last* function that it served. In other words, a rifle cartridge case that has been recycled as a blunt arrowhead is considered to be the latter for purposes of this study. In addition, debitage and unidentified items are considered to be technounits, because the study would be skewed if, for example, the unidentified artifact manufactured of soapstone is not considered to represent a technounit and is therefore excluded. All unidentified artifacts or items of debitage of a given material are considered to be a single *category* of technounit.

Referring again to Table 10, it can be seen that imported artifacts make up 33.3 percent (24 of 72) of all technounit categories. This is a significant increase from the precontact samples on Herschel Island, in which imported artifacts make up 4.8 percent of technounit categories for Washout Feature 3 (3 of 62) and 18.8 percent (13 of 69) for Pauline Cove Feature 7. Figure 20 illustrates the proportion of imported technounits for the three features, quantified as percentages of the total number of artifacts recovered from the feature and as percentages of technounit categories (types). These two measures indicate very different degrees of importance for imported goods in the Feature 1 sample, where imports represent a large majority of all specimens but a minority of types. This is interpreted as indicating that although imported artifacts

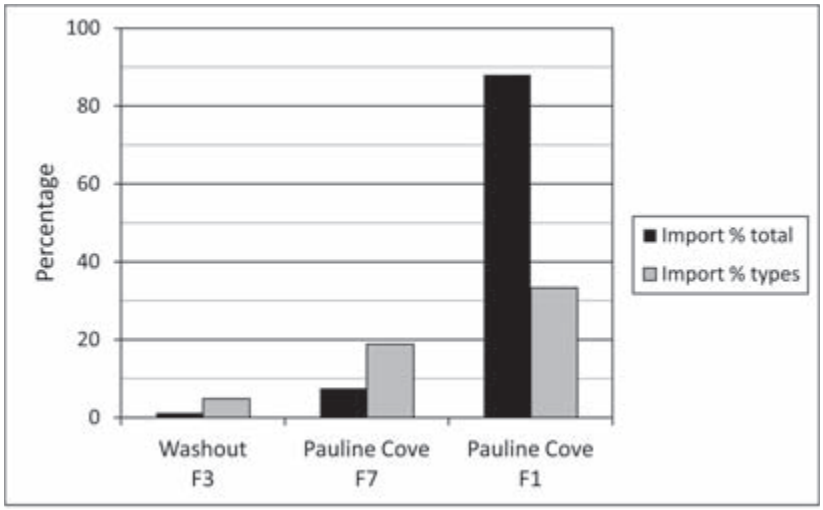

FIGURE 20. Frequencies of imported technounits from precontact and protocontact components. (Illustration by author.)

have become much more important to the Qikiqtaryungmiut, a majority of activities still rely on locally available and produced technologies.

The ethnohistoric record can add some additional data to the nature of trade patterns in which the Qikiqtaryungmiut participated. In 1826, Franklin (1828:130) described the Qikiqtaryungmiut as exchanging locally produced furs, sealskins, and oil for imported iron, knives, and beads at Barter Island. Later authors expand the list of imports to include iron kettles and the list of exports to include baleen, ivory, and soapstone lamps procured from further east, and also report that exported furs consisted of wolverine, fox, and muskrat (Simpson 1845:120; Simpson 1988:528). During the later part of this period, trading post records can indicate some additional artifact types that were potentially *available*, but cannot define which types were actually present on Herschel Island during the protocontact period.

5c. Trade goods should now replace some preexisting artifact categories.

There is very little evidence for complete replacement of artifact categories by imported goods in the Feature 1 sample. For instance, although many firearms-related artifacts are present in the sample, six categories of locally produced land hunting implements, all associated with bow hunting, are still present. Likewise, while an iron ulu blade is present, the use of ground slate technology has not yet been completely abandoned, although it is present in

much lower frequencies than in the precontact sample. One category of artifact that may have been completely replaced consists of engraving tools. Although precontact contexts contain many engraving tool bits manufactured from the teeth of a variety of species, none of these artifacts is present in the Feature 1 sample, whereas a single engraving tool bit of metal was recovered.

5d. The proportion of traded bulk goods to preciosities should grow.

Ethnographic evidence indicates that by 1826 bulk goods were exchanged between Qikiqtaryungmiut and Iñupiat (Franklin 1828), although it is not clear whether the frequency of such exchange altered over time. There is no evidence for the presence of traded bulk goods in the Feature 1 sample. In particular, no remains of packing cases or cans were recovered, and the three bottle fragments are parts of smaller, patent-medicine type bottles. One of the metal fragments may be part of a barrel hoop; however, it was more likely traded as a piece of metal than as part of a complete barrel containing bulk goods. Furthermore, all the species represented in the Feature 1 zooarchaeological sample are available in the vicinity of Herschel Island. (See Table 11.) As was the case with the precontact contexts, exchanged regionally available bulk goods such as sea mammal oil are not archaeologically visible.

5e. Increased importance of long-distance trade, and a reduction in availability of bowhead whales, should in some cases combine to increase residential mobility and reduce time spent in winter dwellings.
   i. Less time should be spent in winter dwellings, which should be less substantial, requiring less labor in their construction.

At Pauline Cove, a total of four semisubterranean driftwood and sod houses dating from the precontact or protocontact periods were excavated during the present project. This number excludes Washout Feature 3, which was not preserved well enough to allow comparison of its architectural details with the other features. Pauline Cove Features 2 and 7, and the lower levels of Feature 5, are dated to the late precontact period, whereas Feature 1 dates to late in the protocontact period.

Each of these four houses exhibits roughly similar internal dimensions, a short entrance tunnel, a construction style incorporating a central room with four corner posts, and two alcoves. (See Figures 10, 13, and 19; Friesen 1991:29–30). However, the central rooms of the three precontact features were all carefully and completely floored with wood, whereas the floor of Feature 1 was composed of earth, with the exception of a small square area finished with adzed logs. Earth

floors were also observed in what may have been abandoned protocontact houses on Osborne Point, on the southernmost point of the Island (Russell 1898:149). A second aspect of the construction of Feature 1 that may indicate a more ephemeral nature is the relatively small amount of sod insulation that surrounded its walls. Features 2, 5, and 7 were more deeply excavated by their builders, and surrounded by more substantial sod walls, than was Feature 1. Clearly, the sample sizes are too small to draw conclusions regarding architectural changes. However, it does seem that less effort was expended in the construction of Feature 1, perhaps because the degree of anticipated mobility was greater (Kent 1991).

ii. In winter occupations there should be less emphasis on stored food, as represented by species obtained during the summer.

As was the case for the precontact period, the protocontact subsistence-settlement pattern of the Qikiqtaryungmiut must be reconstructed primarily on the basis of semisubterranean sod house occupations, given the lack of archaeological sites occupied during other seasons. The Lorenz Overlook site, located approximately 7 km southwest of Demarcation Bay, is a good candidate for a protocontact caribou-hunting site (Wilson 1991). However, it is not reported in a way that facilitates precise chronological interpretation. Nevertheless, it is reasonable to assume a warm-season focus on the Porcupine caribou herd during its migrations and summer calving, because of the general importance of this species to Inuit economies (Burch 1972; Spiess 1979; Stenton 1989, 1991) and because caribou-hunting sites are known to have existed on the Yukon North Slope during the precontact period (Nagy 1990).

The ethnohistoric record reveals additional data concerning the protocontact settlement pattern, although information is concentrated in the first half of the nineteenth century and in the summer season, and information for later decades and other seasons is fragmentary. During July and August of 1826, Franklin (1828) reported many small groups of Qikiqtaryungmiut between the Mackenzie Delta and Camden Bay, located just west of Barter Island. These groups ranged in size from two to more than fifty-four people (Franklin 1828:126, 146). Significantly, the largest aggregation occurred near Barter Island for purposes of trade. Some groups were observed fishing (Franklin 1828:126) and caribou hunting (Franklin 1828:128, 148), and Franklin was informed through his interpreter of the hunting of seals (Franklin 1828:172), beluga whales (Franklin 1828:119), and bowhead whales (Franklin 1828:126). Winter subsistence was not observed directly but is reported to have been based at least in part on stored caribou, seal, and whale meat from the summer hunt (Franklin 1828:172).

The next Euroamerican explorer in the region, Thomas Simpson, reported that in mid-August of 1837 many small parties of Inuvialuit were observed between Demarcation Point and the Mackenzie Delta (Simpson 1845:128). However, his only comment regarding subsistence refers to a caribou hunt on Herschel Island (Simpson 1843:116). A much later period is represented by Stefansson's (1919) interviews with Roxy, an Inuk who spent the early part of his life on the Yukon North Slope during a twenty- to thirty-year period just before 1889. Roxy listed eight main villages, presumably meaning winter settlements, between Herschel Island and the West Channel of the Mackenzie River (Stefansson 1919:166). Whales were hunted from at least two of these villages—at Sabine Point and King Point, which are said to have held twelve and six whaling boats, respectively (Stefansson 1919:162). It is unclear whether these boats were *umiat* used for hunting bowheads (Yorga 1980:33) or kayaks used for hunting belugas (McGhee 1974:10). A final subsistence-related detail recorded by Stefansson (1919:166) is that the winter village at Pauline Cove depended on seals.

At a general level, the zooarchaeological sample from Pauline Cove Feature 1 tends to support the expectation that the subsistence pattern will deemphasize stored food and species available during the warm season and will instead emphasize those available during the winter. (See Table 11.) The sample is dominated by mammals, which constitute 88.5 percent of the total sample, with birds and fish at 6.5 percent and 5.0 percent, respectively. The low frequency of fish is unexpected, given the relatively high frequency of artifacts associated with fishing activities. (See Table 10.) Perhaps these artifacts represent manufacture and repair activities in anticipation of later procurement events. Within the mammalian sample, small seal bones represent the most numerous taxon.

When these frequencies are compared to the two precontact samples (see Tables 6 and 9), an interesting pattern emerges. The protocontact Pauline Cove Feature 1 sample is broadly similar to the precontact Washout Feature 3 sample but very different from the second precontact sample from Pauline Cove Feature 7. Figure 21 presents the relative frequencies of the three zoological classes. In Washout Feature 3 and Pauline Cove Feature 1, mammals dominate, with fish and birds significantly less frequent. In the Pauline Cove Feature 7 sample, on the other hand, fish are much more common than mammals and birds. The Pauline Cove Feature 1 sample contains the lowest fish frequencies and highest bird frequencies. These are contradictory trends in relation to seasonality, given that most fish and bird species were exploited during the warm season.

In terms of seasonality of mammalian taxa, Pauline Cove Feature 1 is again similar to Washout Feature 3 but dissimilar to Pauline Cove Feature 7. Figure 22 presents the percentages of identified mammal specimens combined into two classes: those available only during warm seasons, and those available year-round

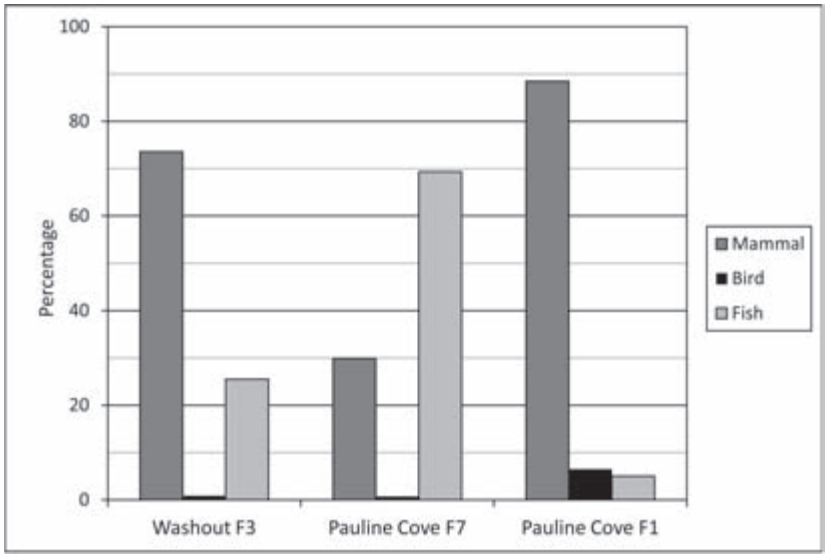

FIGURE 21. Frequencies of mammal, bird, and fish NISPs in precontact and protocontact faunal samples. (Illustration by author.)

or only in winter. Year-round species include all seal, fox, and bear species, plus dog, wolf, least weasel, and wolverine. All other species are considered warm-season for present purposes. In the Washout Feature 3 and Pauline Cove Feature 1 samples, warm-season species make up less than 5 percent of the NISPs, whereas in the Pauline Cove Feature 7 sample they make up more than 20 percent.

In sum, the zooarchaeological samples from Washout Feature 3 and Pauline Cove Feature 1 are dominated by mammalian taxa available during the winter or year-round, whereas taxa available only during warm seasons are relatively rare. The sample from Pauline Cove Feature 7, on the other hand, contains much higher frequencies of fish, most of which were likely obtained during the warm season. These observations indicate that the change in the subsistence-settlement pattern between the occupation of Feature 7 and Feature 1 may not relate to increasing involvement in trade, as previously predicted here. Rather, an explanation for the differences in faunal frequencies should account for the similar pattern in the Washout Feature 3 sample, which is associated with relatively sparse evidence for trade. Such an explanation should also take into account the fact that Washout Feature 3 is interpreted as having been occupied earlier than Pauline Cove Feature 7, as reported in Chapter 6.

One possible explanation for the similarities between the Washout Feature 3 and Pauline Cove Feature 1 faunal samples is that they result from a

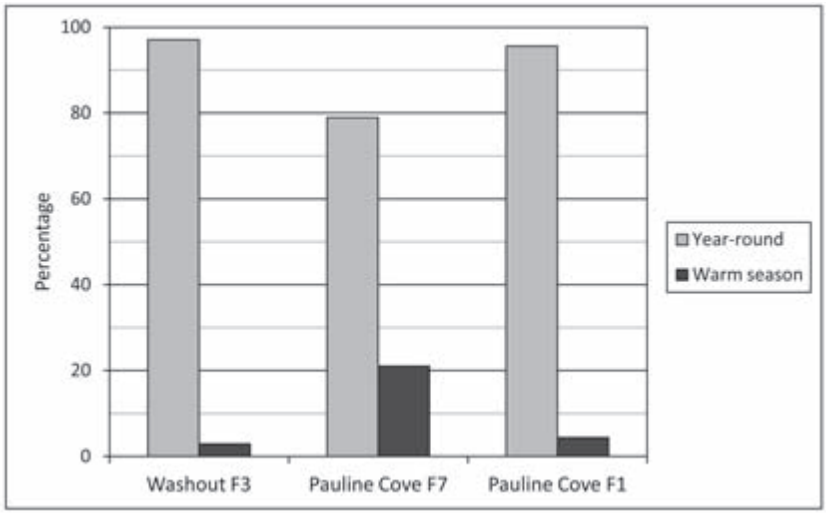

FIGURE 22. NISP frequencies of year-round and warm-season mammal species in precontact and protocontact faunal samples. (Illustration by author.)

reduction in availability of bowhead whales (cf. Betts and Friesen in press). As noted in Chapter 4, early Thule sites in this region tend to be located at points of land that may have been advantageous for acquisition of bowhead whales, with Washout being a good example. Although Yorga (1980:130) downplays the role of bowhead whales in the Washout economy, both of the houses he excavated (Features 1 and 2) contained large quantities of baleen, and thus it is likely that bowheads were important, at least during some periods.

Washout Feature 3 was occupied later than Washout Features 1 and 2 and therefore may have been inhabited during changing environmental conditions brought about by the onset of the Little Ice Age. Although definitions of the duration of this period vary (Jones and Bradley 1992:658), Lamb's (1982:31) contention that it lasted from about 1550 AD to 1900 will be used here. The period was not uniformly cold, however, and timing and severity of cold episodes varied by region (D'Arrigo et al. 2006). Although the exact chronology of the two precontact features cannot be determined with certainty, Washout Feature 3 might have been occupied during a colder period in the later sixteenth century, with Pauline Cove Feature 7 possibly occupied during the warmer middle to late eighteenth century (D'Arrigo and Jacoby 1992:303–304; see also Jacoby and D'Arrigo 1989). If this is the case, during the earlier occupation altered sea-ice patterns may have made bowhead whales difficult or impossible to hunt. In the central Canadian Arctic, Savelle (1987) has dem-

onstrated that increased extent and duration of sea-ice cover due to decreased annual temperatures resulted in a reduction of success in the Thule bowhead hunt, which in turn led to increased residential mobility (see also McCartney 1977; McGhee 1972:123; cf. McGhee 1994; Schledermann 1976). In the present context, however, the link cannot be made with as much certainty because of a lack of a fine-grained chronological definition of the Herschel Island sites and because of an incomplete understanding of the precise effects of cold temperatures on bowhead whale movements in the Beaufort Sea.

If less availability of bowhead whales caused increased mobility during the occupation of Washout Feature 3, then it may have had the same effect during the occupation of Pauline Cove Feature 1. However, as outlined in Chapter 4, a reduction in availability of bowhead whales during the late nineteenth century was probably due at least in part, and maybe wholly, to overhunting by Euroamerican whalers in the Bering Sea. It remains possible that the increased mobility inferred for the Pauline Cove Feature 1 occupation resulted in part from an increased involvement in trade. However, this possibility cannot be evaluated more fully with the information available.

5f. Greater effort should be made to acquire materials for export, as evident in, for example, higher frequencies of bones of fur-bearing animals.

Figure 23 compares proportions of furbearers from Washout Feature 3, Pauline Cove Feature 7 (both from the precontact period), and Pauline Cove Feature 1 (from the protocontact period). Furbearers include muskrat, wolf, arctic fox,

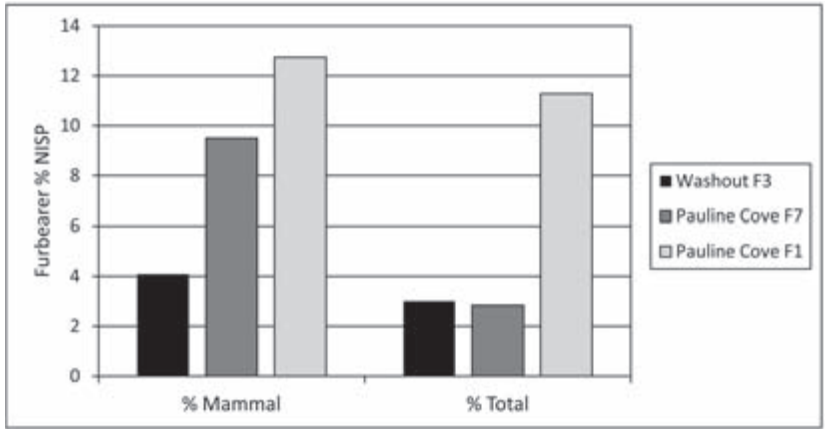

FIGURE 23. Frequencies of fur-bearing mammals as a percentage of total mammal NISPs and total NISPs in precontact and protocontact faunal samples. (Illustration by author.)

red fox, wolverine, and least weasel; note that these taxa should be considered "potential" furbearers in that any of them (with the possible exception of least weasel) might have been obtained for food as well as fur in some circumstances. Furthermore, some other species such as dog, bear, and even caribou can be used for furs. However, the list of species considered potential furbearers is most likely to include those that were obtained primarily for furs. According to percentages of both mammal NISP and total NISP, fur-bearing mammals are present in higher frequencies in Pauline Cove Feature 1 than they are in either of the two earlier assemblages. The comparison between Washout Feature 3 and Pauline Cove Feature 1 is particularly important, because their respective zooarchaeological samples are similar in most other respects, as already outlined. Despite the fact that the inhabitants of these two features engaged in broadly similar subsistence-settlement systems, during the protocontact period a much greater emphasis was placed on the acquisition of fur-bearing animals.

There are no other archaeological sequences in the region that allow a comparison of precontact and protocontact subsistence patterns at a single locality. However, a comprehensive zooarchaeological analysis has been conducted on material from the protocontact Kugaluk site (Morrison 1988). In this faunal sample, the overall frequency of furbearers is very low, probably because the site was a special-purpose caribou-hunting site, and all other taxa are "swamped" by more than 24,000 caribou bones. However, it is interesting to note that the sample contains seven species of furbearers: muskrat, beaver, red fox, arctic fox, marten, wolverine, and lynx (Morrison 1988:64). This apparent increase in exploitation of furbearers during the protocontact period is consistent with the gradually intensifying fur trade evident in the ethnohistoric record (Bockstoce 2009).

5g. Conflict should be reduced in order to enable other forms of interaction.

The ethnohistoric record indicates that during the nineteenth century, relations between Qikiqtaryungmiut and surrounding groups were marked by extreme distrust and potential for conflict. Qikiqtaryungmiut reported to Franklin that constant turmoil existed between themselves and East Channel Inuvialuit (Franklin 1828:120). To the west, linguistic differences and at least occasional conflict characterized the trade at Barter Island with Alaskan Iñupiat, with each group fearing the other (Franklin 1828:130; Simpson 1988:538). Conflict appears to have been constant between other Inuvialuit groups and Gwich'in (Krech 1979), but it is not clear from early accounts whether conflict occurred regularly between Qikiqtaryungmiut and Gwich'in, although mu-

tual suspicion did define the relationship (Franklin 1828), and there were significant linguistic barriers. In general, relations between Inuvialuit and Gwich'in improved over time (Bockstoce 2009).

This pattern of group boundaries marked by suspicion and hostility is characteristic of relations between Alaskan Iñupiat regional groups, as outlined earlier (see summaries in Burch 1974, 1979, 1988, 2005; Burch and Correll 1972). A similar situation appears to have existed between other regional groups within the Mackenzie Delta region, with conflict reported between residents of Kuukpak and Kitigaaryuit (Stefansson 1919:166), Kitigaaryuit and Cape Bathurst (McGhee 1974:3), and Kitigaaryuit and Point Atkinson (Richardson 1828:213, 1851:258). Boundaries marked by high levels of conflict also existed between Inuvialuit and Gwich'in regional groups (Krech 1979).

The question of whether conflict during this period was less than in the preceding precontact period is difficult to assess, because the ethnohistoric record, so useful in the later period, is not available for the earlier one. Bone daggers continued to be made and used during this period, as indicated by an ethnographic reference by Stefansson (1919) and the recovery of a fragment from a nineteenth-century context at Kitigaaryuit (McGhee 1974), but it is not clear if their frequency changes. No other material remains directly linked to conflict have been recovered from protocontact contexts in the region.

However, a relevant observation is that, in general, the level of conflict appears to have been reduced over time *during* the protocontact period. For example, trade between Gwich'in and Inuvialuit rose during the nineteenth century, and the frequency of conflict between the two groups appears to have lessened (Krech 1979). In the winter of 1869–70, Inuvialuit from the Anderson River and East Channel groups lived in a single settlement (Morrison 1988:8), indicating a probable reduction in intergroup conflict. A final indication of decreased conflict is the fact that Barter Island trade is reported to have become less confrontational over time (Simpson 1988:538–539). This pattern mirrors that in Alaska, where Burch (2006) has noted a reduction in large-scale interregional conflict over the course of the nineteenth century.

Internal Differentiation

6. Contact Periphery Expectations—Internal Differentiation

The degree of internal differentiation should increase, particularly when the Qikiqtaryungmiut are compared against regional groups on the East Channel, as a result of (1) a reduction of Beaufort Sea bowhead whale populations (reducing the resource density available to outer coastal regional groups relative

to those on the East Channel); and (2) increasing access to Hudson's Bay Company posts by regional groups on the East Channel. In addition, greater quantities of available European preciosities might be operationalized by status-seeking individuals in core areas, thus leading to further increases in internal differentiation. If world-system breadth extends into North Alaska, Iñupiat groups near Barrow may function as a second "core" because of the long-standing reliability of bowhead whaling in that region, combined with heightened access to trade goods from Russian sources (indirectly) and, during later periods, Euroamerican whalers (directly).

6a. Increased differences in population density should be evident.

If applied with caution, ethnohistoric data can be used to reconstruct relative population densities. Using a variety of sources, the nineteenth-century Qikiqtaryungmiut population has been estimated at approximately two hundred to three hundred individuals (McGhee 1974:11; Usher 1971a:169). This estimate seems reasonable because of a number of lines of evidence. First, the largest aggregation recorded by any early witness referred to fifty-four adults who had assembled for the annual trade fair at Barter Island in 1826 (Franklin 1828:146). Second, the largest number of boats, assumed to be kayaks, reported for a single village by Stefansson's (1919) informant Roxy was twelve, which can be interpreted to indicate sixty, or possibly fewer, people in that village (McGhee 1974:11), although if this reference referred to *umiat*, the number would be higher. Third, the site at Pauline Cove itself is reported to have been the principal village of the regional group (Stefansson 1919:23). However, there is no evidence that it was ever a large site, and a map of Herschel Island produced in 1889 (Bockstoce 1977:35) indicates only four abandoned houses at the site.

Populations of some neighboring regional groups were probably significantly higher. The East Channel of the Mackenzie Delta apparently contained two regional groups: the Kuukpangmiut, with a central village at Kuukpak, and the Kitigaaryungmiut, with a central village at Kitigaaryuit. Both groups' subsistence-settlement systems revolved around the acquisition of beluga whales during the summer months. Before its abandonment in the latter half of the nineteenth century (Friesen and Arnold 1995b:23), Kuukpak may have been relatively large. This deduction is based on the reported aggregation of two hundred to three hundred people at Tent Island, encountered by Franklin (1828), who were probably Kuukpangmiut (McGhee 1974:12), as well as on the large size of the remaining portions of the archaeological site at Kuukpak (Arnold 1994a).

However, during the latter half of the nineteenth century, Kitigaaryuit saw the largest aggregation of people in the Mackenzie Delta region. Estimates

often place this population at around one thousand people (McGhee 1974:12; Stefansson 1913; Usher 1971a:171), although that number represents a summer aggregation that may have included some people from neighboring regional groups. The largest population recorded during the protocontact period was that reported by Richardson (1851:236), who, in 1848, observed "about two hundred Eskimos coming off in their kaiyaks . . . and three umiaks filled with women and old men, eight or ten in each." Given that the number of kayaks probably represented all adult men in the settlement, a total population of one thousand men, women, and children seems reasonable (Friesen in press b). The actual site of Kitigaaryuit does not retain clear evidence for this major annual aggregation, which must have taken place largely on the beach during the summer (McGhee 1974) and which is, therefore, wiped clean of archaeological evidence each spring. Farther to the east, protocontact-period Point Atkinson held seventeen houses plus a *karigi* in 1826 (Richardson 1828). Given that many of these houses were large, potentially inhabited by up to six families, the population of this settlement may have been in the hundreds as well.

During the nineteenth century, the coastal area west of the Qikiqtaryungmiut was uninhabited for much of the year. Beyond this zone were two regional groups, Kuukpigmiut and Ikpikpagmiut, that spent summers on the coast but the greater part of the year in the interior (Burch 1980:285–287, 2005). Relatively little is known about these groups, although they were probably relatively mobile, without large population aggregations except during trade fairs. West of these groups were the Kakligmiut of the Point Barrow region. This group is one of the best-documented societies in the Arctic and is widely known as a model for relatively sedentary, densely populated, and socially complex bowhead whale hunting societies (e.g., Murdoch 1892; Sheehan 1985; Spencer 1959, 1972, 1984; Worl 1980). In the early 1850s, the population of the two major settlements, Nuwuk and Utqiagvik, was recorded as 309 and 250, respectively (Simpson 1875).

Finally, population sizes of the Vunta Gwich'in south of the Qikiqtaryungmiut cannot be accurately estimated. However, using descriptions of their annual cycle as a basis (Le Blanc 1984:20–22; Morlan 1973:85–93; Slobodin 1981), it seems unlikely that large population aggregations were a regular occurrence.

As a result of all these data sources, it is clear that differences in population density existed during the protocontact period, with larger populations in the East Channel than on the Yukon North Slope. However, the degree to which these density differences may have changed relative to those of the precontact period is unknown.

6b. Core groups should obtain larger proportions of prestige goods.

As discussed previously, there are no excavated components from the proposed core area of the Mackenzie River East Channel that can be dated exclusively to the protocontact period. Slightly further east, the Kugaluk site is protocontact in age but cannot be considered to be in the core area, as it is most probably associated with the Nuvugarmiut (Atkinson Point Inuvialuit) and not the Inuvialuit of Kuukpak or Kitigaaryuit (Morrison 1988). Furthermore, Morrison (1988:96) suggests that the occupants of Kugaluk were relatively low-status individuals within Nuvugarmiut society, and this further reduces their comparability to a hypothesized core area. For these reasons, and because Kugaluk was probably occupied ten to twenty years earlier than Pauline Cove Feature 1, the two assemblages are not directly comparable in terms of access to trade goods and other factors that would affect the frequency of imported goods potentially associated with prestige. As reported earlier, imported goods make up 88.0 percent of Pauline Cove 1 technounits, as opposed to 13.8 percent of Kugaluk technounits.

In Northwest Alaska, a number of protocontact components were encountered during extensive excavations at the Utqiagvik archaeological site (Hall and Fullerton 1990a, 1990b, 1990c). However, these ordinarily occur as thin artifact scatters on top of late precontact components, in contexts that are too mixed or sparse to allow comparison (e.g., Dekin 1990:4–5). Other archaeological research in the Barrow area has also deemphasized protocontact and contact occupations (e.g., Ford 1959; Stanford 1976). Gwich'in areas to the south of Herschel Island have also failed to yield high-resolution protocontact samples.

Ethnohistoric data are not of a high-enough resolution to allow a comparison of absolute frequencies of prestige goods either to the west or to the east of Herschel Island. Although early explorers might have mentioned the presence of trade goods, they did not record their relative or absolute frequencies (e.g., Richardson 1828:197, 225). An added problem in this and later periods is the tendency of ethnographers or explorers to emphasize exotic aspects of societies they encountered and deemphasize the role of imported ideas and materials in the lives of native peoples (Kilmarx 1986).

6c. Increased differences in degree of sedentism should be evident.

As previously outlined, the degree of sedentism may have been reduced during the occupation of Pauline Cove Feature 1. As well, ethnohistoric accounts of Qikiqtaryungmiut during this period indicate relatively small and mobile groups. On the East Channel, on the other hand, occupation for some Kitigaaryungmiut appears to have continued to be more sedentary, resulting from the storage of large quantities of beluga whale meat and blubber (Mc-

Ghee 1974). This impression of a greater degree of sedentism is reinforced by the labor invested in construction of elaborate cruciform dwellings, which continued to be used during the protocontact period at Kitigaaryuit (McGhee 1974:28–29). Similar cruciform dwellings were recorded by Richardson (1828:215) at Atkinson Point in 1826.

To the west, the Kuukpigmiut and the Ikpikpagtmiut groups probably exhibited a similar degree of mobility to the Qikiqtaryungmiut. Beyond them, the Kakligmiut were highly sedentary because of their reliance on stored bowhead meat and blubber, with some individuals living in the large settlements year-round and most people living there for the majority of each year (Spencer 1959). Vunta Gwich'in annual settlement patterns probably incorporated a greater degree of residential mobility than those of the Qikiqtaryungmiut (Le Blanc 1984).

6d. Increased differences in degree of social complexity should be evident.

In addition to the frequency of prestige goods already outlined, the concept of social complexity can be approached through several other categories of archaeological and ethnohistoric data, although some cannot be assessed through available data. In the present case, the presence of *karigis* and large, elaborate houses can both be used to infer aspects of complex social organization. *Karigis* are a special type of construction used for men's work or communal events in Inuit contexts (Habu and Savelle 1994; Rainey 1947; Sheehan 1990:240–242; Spencer 1959; Stefansson 1919:170). Both purposes serve as formal means of integrating communities and tend to be less formal, or not even present, in smaller, less complex communities (e.g., Jenness 1922).

No evidence for the presence of *karigis* has been reported for the Qikiqtaryungmiut, either archaeologically or ethnohistorically, although they may have been present. However, they are recorded as important parts of the larger communities east and west of the Yukon North Slope. In bowhead whaling settlements of Northwest Alaska, *karigis* were a sort of "headquarters" for whaling crews, as well as the site of communal ceremonies, many of which related to the successful pursuit of the bowhead hunt (Sheehan 1990). On the East Channel, protocontact *karigis* were reported at Kuukpak and Kitigaaryuit (Stefansson 1919:166, 170), and were the scenes of dances, ceremonies, and men's activities during the summer period of greatest aggregation. There is no evidence of special communal structures in Vunta Gwich'in settlements, with the possible exception of sweathouses (Slobodin 1981:518).

A second data class relevant to social complexity is the presence of houses that were large, complex, or both. House form can correlate with complexity

in several ways, two of which are important in the present context. First, large houses can serve as prominent symbols, potentially displaying information related to status, prestige, or territorial rights (e.g., Matson and Coupland 1995; Soffer 1985). Second, large houses, and the larger coresidential groups that they imply, may indicate increased "basal social units," which represent one mechanism for coping with "scalar stress" brought on by the social pressures of large, long-term human aggregations (Friesen 1999; Johnson 1982).

Pauline Cove Feature 1 is the only protocontact house thus far excavated on the Yukon North Slope. As reported previously, it contains two alcoves and appears to incorporate less labor than did earlier houses at the site. On the other hand, large and complex "cruciform" houses are characteristic of the East Channel regional groups during this period, as well as regions to their east (Richardson 1851; Savoie 1970). These houses held an average of six families each (McGhee 1974:14).

West of Herschel Island, the Kuukpigmiut and Ikpikpagtmiut groups probably had relatively insubstantial house types as a result of their higher mobility levels (e.g., Spencer 1959:44–49). The Kakligmiut, on the other hand, had

Table 20. Summary of Expectations for the Contact Periphery

Expectation	Archaeological Data	Ethnohistoric Data
4. Breadth should increase.		
4a. Trade goods from greater number of regions	+/−	+
4b. Aggregation sites increase in number	N/A	+
4c. Boundary maintenance decreased, as indicated in style	N/A	+/−
5. Depth should increase.		
5a. Trade goods more frequent	+	+
5b. Trade goods in more functional classes	+	+
5c. Trade goods replace some local technologies	+/−	N/A
5d. Proportion of bulk goods increases	−	N/A
5e. Increased mobility		
i. Winter dwellings less substantial	+	+/−
ii. Less emphasis on stored food	+	N/A
5f. Increased acquisition of products for export	+	+
5g. Evidence for reduced conflict	N/A	+
6. Degree of internal differentiation should increase.		
6a. Increased differences in population density	+/−	+/−
6b. Increased differences in amount of trade goods	+/−	+/−
6c. Increased differences in degree of sedentism	+	+/−
6d. Increased differences in social complexity	+/−	+/−

Table by author.

Note: N/A = no data; + = supported; − = negated; +/− = equivocal or contradictory data.

carefully constructed winter houses, which often incorporated long entrance tunnels with storage chambers and kitchen alcoves. However, these houses appear to have been relatively small and rectangular, probably housing the equivalent of one extended family each (Spencer 1959:49–61). The Vunta Gwich'in did not, apparently, build houses as permanent or elaborate as those of the Qikiqtaryungmiut or any other Inuvialuit group in the region (Slobodin 1981).

Thus, although regional groups to the east and west were likely more socially complex than the Qikiqtaryungmiut during this period, it is not clear that the *degree* of complexity had increased over that of the precontact period.

Summary

During the protocontact period, expectations can potentially be addressed by both archaeological and ethnohistoric data sets, although in many instances no relevant data were recovered or the data are equivocal. (See Table 20.)

Nevertheless, most expectations that could be assessed were supported. Further interpretation of the Qikiqtaryungmiut world-system during this period will be presented in Chapter 10.

9

The Qikiqtaryungmiut World-System in the Marginal Periphery

THE PERIOD BETWEEN 1889, when the whalers arrived at Herschel Island in force, and about 1907, when the price of baleen collapsed and whalers' overwinterings were reduced in frequency (Bockstoce 1980, 1986), saw Herschel Island drawn into the marginal periphery of the European world-economy. During this period, enormous quantities of both bulk goods and preciosities became available to Qikiqtaryungmiut at Pauline Cove on Herschel Island. This greater availability is expected to increase the indigenous world-system's breadth and depth and to change the form of internal differentiation, with the Qikiqtaryungmiut potentially becoming a core society.

Before evaluating the expectations outlined in Chapter 5, a number of shortcomings in the data for this period must be acknowledged, because they limit the scope and reliability of potential interpretations. First, the early contact components at Pauline Cove, represented by Feature 8 and the upper level of Feature 5, are both interpreted to represent warm-season occupations, whereas earlier components from Herschel Island are all derived from winter houses. Because very different categories of activity and behavior are expected to occur during different seasons, the resulting artifact and ecofact distributions will not be directly comparable (Hickey 1986:81).

Second, Euroamerican trade goods recovered from early contact period contexts cannot be considered to have been obtained through exchange with other indigenous regional groups. Because of the presence of the whaling fleet at the site, most of the trade goods are assumed to have been obtained directly from the whalers. In terms of the indigenous world-system, therefore, these trade goods can be used to indicate the range of goods that entered the system but cannot be interpreted uncritically as direct evidence for increasing depth of the indigenous world-system.

A third and somewhat unexpected problem is the fact that the ethnohistoric record for the early contact Qikiqtaryungmiut is not better than that of previous periods and is in some ways inferior, despite the intense Euroamerican activity at Pauline Cove. Early accounts and secondary sources do not emphasize Inuit activities, and when they do, it is not always clear whether the Inuit referred to are Qikiqtaryungmiut and other Inuvialuit (referred to as some variant of "Kogmollik" in most sources) or Alaskan Iñupiat (referred to as some variant of "Nunatamiut"). Many individuals from this latter group were brought to Herschel Island by whalers and played many roles, including serving on whaling crews, hunting for caribou to provision ships, and sewing clothes. Others traveled to the area by themselves. Also present, although in smaller numbers, were Siberian Yupik "Masinkers" (Bockstoce 1986:274). Therefore, when ethnohistoric sources refer to "Eskimos" it is often unclear which group is being referred to.

Fourth, and related to the previous issue, is the question of whether the two early contact-period contexts on Herschel Island, Features 5 and 8, relate to Inuvialuit (local Qikiqtaryungmiut from the Herschel Island area or others who traveled from farther east in the Mackenzie Delta region), as opposed to Inuit from elsewhere, and in particular Alaskan Iñupiat (Friesen 2009b). Iñupiat culture, including material culture, was very similar to that of the Inuvialuit; very few categories of material culture can be used to differentiate the two. This is particularly true of the Qikiqtaryungmiut, who were the westernmost Inuvialuit, many of whom traveled to Barter Island annually to trade with Iñupiat before the arrival of whalers. However, Feature 8 did include one arrowhead that hints at an Inuvialuit origin. It is made of bone, in a form that is relatively common in the Mackenzie Delta region but rare or unknown to the west. In fact, Murdoch (1892:206) collected one of these arrowheads in Alaska, where it was referred to as a "Kunmud'lin" type, the name being the Iñupiat term for Inuvialuit (see Morrison 1988). When this is combined with the fact that these two features are located at some distance from the main whaler settlement, which is not what would be expected from Iñupiat closely connected to the whaling ships, it seems most likely that they represent local Inuvialuit occupations. It is significant that interior Gwich'in also came to Herschel Island during this period, primarily to trade and to hunt for whalers' subsistence; however, their material culture is different enough that they can be ruled out as having occupied these two features.

Fifth, and finally, the expectations outlined in Chapter 5 are based on the assumption that a viable and relatively independent indigenous world-system continued to function during the early contact period, despite epidemic diseases, immigration, and other important factors that were initiated or whose

impact increased during this period. If this assumption is not fully sustained in the present case, the accuracy of the expectations will be affected.

Because of all these shortcomings, many of the expectations for the marginal periphery cannot be fully evaluated, or can be evaluated only in a relatively cursory fashion. The magnitude of their effects, and the issue of the relative independence of the Qikiqtaryungmiut world-system in the early contact period, will be addressed further in this and the next chapter.

Breadth

7. *Marginal Periphery Expectations—Breadth*

World-system breadth should increase.

7a. Trade goods should originate in a greater number of regions.

A much greater variety of trade goods was recovered from Pauline Cove Features 5 and 8 than in any earlier feature. Almost all these objects are of Euroamerican origin, with no examples of soapstone or native copper items recovered, although several ivory objects are present in both samples. A few of the imported artifacts point to a possible origin to the south or east with the Hudson's Bay Company, based on the assumption that most goods available from the company would originate in Britain or its colonies (Ray 1988), whereas virtually all whalers were provisioned in the United States or its territories (Bockstoce 1986). In particular, the glass bead samples from both features include examples of Cornaline d'Aleppo lined red beads, as well as numerous seed beads, which were previously suggested as probably being derived from the Hudson's Bay Company. In addition, one of the 30-30 cartridge cases from Feature 5 bears the headstamp "D C Co 30-30," indicating production by the Dominion Cartridge Company, a Canadian ammunition manufacturer (Belton 1967). Two British items from Feature 8 might indicate an origin in the Hudson's Bay Company, although they were probably widespread in the United States by the end of the nineteenth century: a "Rose's Lime Cordial" bottle and a "Lea & Perrins" Worcestershire sauce bottle. In Feature 5, an additional Worcestershire sauce bottle was recovered, although it is unclear whether it was manufactured by Lea and Perrins or an imitator. The ivory objects are again assumed to originate in Alaska, although the mechanism through which they arrived at Herschel Island is not clear.

However, a great majority of the artifacts probably originated with the whalers. In the Feature 8 sample, all fifty-two of the cartridge cases that bore

legible headstamps were manufactured by the American manufacturers Winchester Repeating Arms Company, United States Cartridge Company, and Union Metallic Cartridge Company (Barnes 1989:421). In Feature 5, thirty-two legible cartridge cases were manufactured by American companies, whereas only the one specimen already noted was manufactured in Canada. Other objects with American trademarks from Feature 8 include a metal pencil end with an engraved eagle design bearing the text "EAGLE PENCIL Co NEW YORK..PAT'D MARCH 25 79," a metal button with an eagle design and the mark "HENRY V. ALLIEN (sic) & CO..N.Y.," and a clear glass bottle fragment with a partial embossed trademark "CURTICE BROTH . . . PRESE . . . ROCH . . . ," probably referring to Rochester, New York. In Feature 5, two bottles were definitely from the United States; one reads "McMONACLE AND ROGERS' PREMIUM FRUIT FLAVORS . . . MIDDLETOWN N.Y.," and the other ". . . IDGE & CO . . . 1868 . . . PURE POPCORN WHISKY . . . CINCINNATI, O. . . ." Although many of the imported goods were undoubtedly traded directly from whalers, an unknown proportion may have been traded through indigenous intermediaries.

7b. Aggregation sites containing evidence of occupation by more than one group should increase in number or density of occupation.

As with previous periods, no firm archaeological evidence exists for aggregation sites resulting from meetings between Qikiqtaryungmiut and other regional groups. However, ethnohistoric evidence indicates that at this time Pauline Cove itself became such an aggregation site. With the whaling ships came not only crew members from the United States, Hawaii, Cape Verde Islands, Europe, and many other locations (Bockstoce 1986:275; Stevenson 1968) but also individuals from many native groups including Inuit from Siberia, coastal Alaskan settlements, interior Alaskan regions, and the Mackenzie Delta, as well as Gwich'in from interior areas (Bockstoce 1986:270–275). Although many of these people were employed on whaling crews, an unknown proportion of them arrived at Herschel Island of their own accord, in order to seek the benefits of interaction such as trade. In essence, Herschel Island probably replaced Barter Island and Kitigaaryuit as a regional trading center. The trading center at Barter Island was reduced in importance at this time, and it ceased to exist in 1901 (Stefansson 1919:186).

7c. Boundary maintenance should decrease, as indicated by a reduction in stylistic differences for artifacts that convey social meaning.

Currently available archaeological evidence cannot be used to address this issue. However, widespread reports of interregional movements of people at this time imply that regional group boundaries were now almost completely dissolved. By the turn of the century, Inuvialuit of all formerly distinct regional groups were passing freely from Baillie Island to Herschel Island, as evident in Nuligak's (1966) accounts of his movements after about 1901. It seems likely that a majority of all Inuvialuit visited Herschel Island every few years. Other examples of increased interaction between regional groups include increased travel and intermarriage between Qikiqtaryungmiut and Inuvialuit from other regional groups (Nagy 1994b:27), rising levels of Qikiqtaryungmiut interaction with Gwich'in and Iñupiat (Nagy 1994b:108–110), and reports of Anderson River Inuvialuit on the Yukon North Slope in 1894 (Russell 1898:144).

Depth

8. Marginal Periphery Expectations—Depth

World-system depth should increase.

8a. Trade goods should occur in higher frequencies.

As already mentioned in this chapter, a majority of the trade goods recovered from early contact contexts on Herschel Island probably came from direct trade with Euroamerican whalers. As such, they can be used to represent the frequencies of goods *available* at their source, but they do not necessarily indicate the frequencies of trade goods circulating between native groups within the indigenous world-system. (See Tables 12 and 14.) Feature 5 contained 94.8 percent (975 of 1029) traded technounits, and Feature 8 contained 96.5 percent (919 of 952) traded technounits. Both of these frequencies are, as expected, higher than those of the protocontact Feature 1, which contained 88.0 percent trade goods.

The difference in volume of trade goods between features from these two periods is actually much greater than these percentages imply. While a majority of the artifacts from protocontact Feature 1 are small glass beads, early contact Features 5 and 8 contain many larger artifacts such as complete glass bottles, an accordion, a length of chicken wire, a metal tray, and a rubber boot. A rough estimate of these artifact volumes indicates that Feature 1 contained approximately 10 to 15 percent trade goods, whereas Features 5 and 8 contained approximately 90 to 95 percent trade goods by volume.

8b. Trade goods should occur in a greater number of functional categories.

In the Feature 5 and 8 assemblages, imported goods make up 71.6 percent (63 of 88) and 84.1 percent (69 of 82) of technounit categories. These are much higher frequencies than was the case for Feature 1, which contained 33.3 percent imported technounit categories. In the protocontact sample, imported artifacts were largely restricted to firearms-related implements and ornaments, particularly beads. (See Tables 12 and 14.) In the early contact samples, artifacts in these categories are still present, but numerous other categories have been introduced or greatly expanded in volume, most notably nails, cans, bottles, fabric, implements associated with social activities (e.g., accordion, playing cards), and implements associated with smoking.

The ethnohistoric record includes a number of disparate observations that reinforce the impression of an explosion of new types of trade goods used by Inuvialuit of this period. These trade goods ranged from food items, such as flour, coffee, and syrup (Russell 1898:141–142), through chewing gum (Nuligak 1966:29) and apparatuses for distilling whiskey (Peake 1966:71), to items as large as whale boats (Ingram and Dobrowolsky 1989b:150). The great variety of trade goods is perhaps best indicated by Russell's (1898:145) observation of a group of Inuvialuit, probably Qikiqtaryungmiut, on the mainland just south of Herschel Island: "One of the men wore a new sombrero with a very broad brim. Others had miscellaneous odds and ends combined with their native costumes, with the effect on the beholder of having discarded a portion of their apparel and substituted an incongruous textile fabric to mark the loss. Several wore tight-fitting, red flannel drawers over their deerskin trousers."

8c. Trade goods should replace a greater number of categories of material culture.

Although the ethnohistoric record contains extensive evidence for the introduction of new trade good categories, the degree to which they replace preexisting categories of material culture is not always clear. Thus, the archaeological record is a critical source of information. Although the sample of locally manufactured artifacts from Features 5 and 8 is relatively small, it is surprisingly diverse. Local technologies appear to remain in use, at least occasionally, for many tasks, including harpooning sea mammals, hunting land mammals with bows, fishing, ornamentation, and various tasks associated with manufacturing and food preparation. Of course, not all these items were necessarily used during the occupation of the early contact features. Rather, some may have been retained beyond the period of direct use by Inuvialuit as a result of conservatory (Schiffer 1987:32–35) or other processes, and then deposited because of loss or as de facto refuse (Schiffer 1987:89–98) during abandonment of the features.

It seems apparent that bow-and-arrow technology, for example, had been almost completely replaced by the time that Features 5 and 8 were occupied. Perhaps the most significant complete replacement is in tasks associated with cutting and engraving. Neither sample contained any locally produced blades for men's knives, ulus, or engraving tools. One ground slate scraper was recovered from Feature 5, perhaps indicating that ground slate remained preferable to sharp iron blades for skin scraping.

8d. The proportion of bulk goods to preciosities should increase.

The early contact artifact samples from Pauline Cove contain the earliest clear evidence for the importation of food, primarily in the form of can fragments. Cans are assumed to be underrepresented in the artifact sample, because the thin ferrous metal of which they were manufactured rusts easily. Estimates of minimum numbers of cans based on whole or partial rim fragments indicate a minimum of seven round cans from Feature 5, ranging in diameter from 9 to 14 cm, and six cans from Feature 8, of which five were round, ranging in diameter from 7.5 to 15 cm, and one was rectangular. (See Table 21.) Feature 8 also contained three can keys. The contents of these cans cannot be determined with accuracy, although they probably held food of some type, and the rectangular can probably held meat.

A second category of container, glass bottles, may represent preciosities more than bulk goods. Where identifiable, the contents of these bottles consisted of "medicine," condiments and sauces, or liquor. A majority, in fact, are

Table 21. Minimum Numbers of Cans and Bottles from Pauline Cove Features 5 and 8

	Feature 5	Feature 8
Cans		
Round	7	5
Rectangular	–	1
Bottles		
"Case" type, olive	3	2
Round, aqua	3	1
Rectangular, large, aqua	1	–
Round, green	6	2
Round, brown	2	2
Round, manganese	1	–
Round, clear	5	3
"Medicine" type, clear	4	2

Table by author.

interpreted to have been liquor bottles, for four reasons. First, most are too large for sauces or medicines. Second, one of the largest bottles contains the embossed words "PURE POPCORN WHISKY." Third, five of the bottles are a distinctive type of dip-molded "case" bottle, named because their square shape was designed for transport, usually of liquor, in cases (Jones and Sullivan 1989:72). Fourth, two bottles have a "champagne finish," which is also associated with liquor (Jones and Sullivan 1989:79).

A final category of archaeological data indicative of exchanged food consists of botanical remains. Feature 5 contained one plum pit and one walnut shell fragment, and Feature 8 contained seven plum pits, six cherry pits, eight hazelnut shell fragments, and two walnut shell fragments. Although these quantities represent a very small amount of food, they serve as a reminder that many new types of food were now obtained through trade.

Written sources also indicate that trade now saw the exchange of larger volumes of bulk goods, including both large implements and food. For example, Russell (1898:141) noted that in 1894 two Inuvialuit near the Mackenzie Delta were "living in a new wall tent, which they had obtained from the whalers; [and had] several bags of flour, as much as some northern posts receive for a year's allowance." With the arrival of the whalers, not only were these items available in larger quantities but also at much reduced prices. For example, Bockstoce (1986:276) reports that a 100-lb (45-kg) bag of flour cost two dollars on Herschel Island, as opposed to thirty dollars at Fort McPherson, the nearest Hudson's Bay Company post.

8e. Subsistence-settlement systems should change further to articulate better with the world-economy. Sources of newly available resources in the form of Euroamerican goods should become central to settlement patterns.

Reconstruction of the early contact Qikiqtaryungmiut settlement pattern is difficult, for reasons outlined in the introduction to this chapter. Of particular note is the fact that a comparison of the faunal samples from Features 5 and 8 with those from earlier features would yield limited, and possibly spurious, information, because the samples from the two periods represent different seasons and access to different technologies (Hickey 1986). Nevertheless, significant aspects of the faunal remains will be discussed here.

Mammals constitute a majority of the samples from Features 5 and 8, representing 85.8 percent and 81.0 percent of the NISPs, respectively. Within the mammals, combined ringed and harbor seals represent the most abundant taxon from Features 5 and 8, at 72.7 percent and 61.8 percent of identified

specimens, respectively. Fish represent 9.8 percent and 2.9 percent of the samples—lower than expected, given the assumed warm-season occupation. Finally, at 9.3 percent and 11.3 percent of the samples, bird bones are present in significantly greater frequencies than in any of the earlier Herschel Island contexts. This may reflect the fact that occupations occurred during the warm season (although a great majority of specimens from Feature 5 are ptarmigan, which are available year-round), or it could reflect easier acquisition resulting from the adoption of shotguns.

Although comparisons are of limited value, it should be noted that these faunal frequencies are similar to those from the protocontact sample from Feature 1 and the precontact sample from Washout Feature 3, particularly in the dominance of mammals within the overall sample and of seals within the mammals. This is unexpected, given the fact that Washout Feature 3 and Pauline Cove Feature 1 are interpreted as representing primarily winter occupations, whereas Features 5 and 8 represent primarily warm-season occupations. This high frequency of seals in the early contact samples may be due to the expanded use of firearms during the contact period (e.g., Whittaker 1937:185) or to increased competition by whalers for other species. In support of this argument, faunal frequencies from Features 5 and 8 can be compared to those of Washout Feature 4, which represents the one warm-season occupation from the precontact period on Herschel Island (Friesen and Hunston 1994:57). Feature 4 contained only 26.3 percent (63 of 240) mammal bones and was dominated by fish, which made up 71.3 percent (171 of 240) of the sample. Only eight specimens were identified as ringed or harbor seal. Therefore, warm-season subsistence appears to have changed dramatically by the early contact period.

Ethnohistoric sources supply only a limited amount of additional information, because most early writers do not differentiate between local Qikiqtaryungmiut, other Inuvialuit (Kogmolliks), and Alaskan Nunatamiut. Therefore, if a given hunting party is mentioned as obtaining caribou, for example, it is not always clear if this refers to local Qikiqtaryungmiut pursuing their usual subsistence pattern, or Nunatamiut hunting in their capacity as "ship's natives" (Bockstoce 1980). However, a few written sources add some information to this issue.

Both Russell (1898) and Stefansson (1919:166, 172) noted a number of small coastal settlements between Shingle Point and Herschel Island occupied during the summer. Russell's (1898:141–150) observations, made in the summer of 1894, indicated that Inuvialuit were actively acquiring fish and caribou near Shingle Point, seals and fish at Kay Point, and caribou at inland locations. In September of 1906, near the end of the period, Stefansson (1919:164) noted that most of the Inuit at Pauline Cove were Kogmollik (Inuvialuit) and were subsisting on netted seals. At that time, net fishing was a common

activity at these coastal settlements (Cook 1926:263; Stefansson 1919:153), and large quantities of fish were cached for later use (Stefansson 1919:157). Whittaker (1937:179, 185) reports that Inuvialuit on Herschel Island occasionally pursued beluga whales in sailing boats acquired from whalers and that they relied on seal hunting with rifles for much of the year. In addition, Qikiqtaryungmiut engaged in spring duck hunts (Nagy 1994b:80).

Aside from being a source of trade goods, the whalers may have affected the subsistence system by their presence in two additional ways. First, they made enormous demands on local caribou populations, which provided the whalers' meat of choice. Bockstoce (1980:383) estimated that whalers at Herschel Island consumed approximately 12,308 caribou over the eighteen-year period between 1890 and 1908. Although Bockstoce (1980:383) interprets this number as too small to have had a detrimental effect on the size of the Porcupine caribou herd, it seems quite possible that it affected the amount available to Qikiqtaryungmiut, who may have been outcompeted for local caribou populations by Nunatamiut brought into the area specifically to hunt the animals. Second, a significant amount of food may have become available from bowhead whales killed by whalers, who often removed only the baleen and left the remainder of the carcass to drift (Nagy 1994b:34, 70).

Perhaps the aspect of the early contact Qikiqtaryungmiut settlement pattern that is least well known is the degree to which it changed to take advantage of the newly available trade goods at Pauline Cove. The archaeological data already presented here indicate that some Qikiqtaryungmiut spent at least a part of the warm season at Pauline Cove, at which time they obtained a wide variety of trade goods, including bulk goods. However, the number of Qikiqtaryungmiut in Pauline Cove during any given season is difficult to determine. In 1894, Cook (1926:56) estimated that there were two hundred Inuit living at Pauline Cove, but he does not indicate the proportion that were of local origin. These Inuit were long-term residents, as indicated by the fact that they stayed for at least the fall and winter. Bockstoce (1986:275) estimates the number of resident Inuvialuit, as opposed to temporary immigrants, on Herschel Island in any given year to be between fifty and one hundred. An unknown proportion of these were Qikiqtaryungmiut. In 1893, the Anglican missionary Isaac Stringer (1893) visited Herschel Island and, although not specifying a number, reported that "some of them were of the same tribe as I visited last summer (at Kitigaaryuit) but most of them were of another tribe called Nooatakmioots." By 1906, as the whaling period was winding down, Stefansson (1919:164) reported that most of the Inuit at Pauline Cove were Kogmollik, although their number was now quite small at fifteen grown men plus, presumably, their families.

To summarize, after 1889 the Qikiqtaryungmiut began to use Pauline Cove as a source of preciosities and bulk goods, in addition to the site's previously available seals, fish, and other resources. In addition, some of the population apparently began to live at Pauline Cove year-round. However, many Qikiqtaryungmiut, perhaps a majority, appear to have continued to rely on their earlier key resources of seals and fish during this period rather than settling at Pauline Cove. A number of reasons can be suggested for this continuation of a more mobile lifestyle. First, a high degree of independence may have been preferred by many individuals, rather than economic reliance on whalers and traders. Second, there may have been some degree of mistrust or fear of whalers. This possibility is suggested by the fact that during the early contact period Inuvialuit men are reported to have left women and children behind on Avadlek Spit before working for whalers (Nagy 1994b:29). Third, the whalers were mainly interested in caribou meat as a trade item from Inuit. The Nunatamiut "ship's natives" were considered better caribou hunters than Qikiqtaryungmiut (Cook 1926:263) and may have outcompeted them, leaving less opportunity for Qikiqtaryungmiut to trade with the whalers.

8f. More effort should be made to obtain commodities for export, as evident in increased numbers of bones of fur-bearing species and species that yielded meat for trade.

At Pauline Cove, the whalers purchased many types of food, including caribou, moose, mountain sheep, seal, fish, and birds from Inuit and Dene, with caribou being the most frequently traded type of meat (Bockstoce 1980:381). However, because all these species were also consumed by Qikiqtaryungmiut, their presence in the Feature 5 or 8 assemblages cannot be linked to trade. In fact, ethnohistoric sources indicate that much of the whalers' caribou meat was provided either by northern Alaskan Iñupiat brought to Herschel Island for use as hunters (Bockstoce 1977:42) or by Gwich'in hunters who regularly appeared at Herschel Island with toboggan loads of meat (Cook 1926:59–75).

Frequencies of furbearers are also difficult to compare to those from earlier components because of different seasonal availability and value; this is particularly true because warm-season furs are often of less value than those obtained during the winter (Bockstoce 2009). Briefly, however, the bones of fur-bearing animals are very infrequent in Feature 8, at 0.2 percent (2 of 969) of mammal NISPs and 0.2 percent (2 of 1,197) of total NISPs. However, in the Feature 5 sample, furbearers make up 12.1 percent (144 of 1,191) of mammal NISPs and 10.4 percent (144 of 1,388) of total NISPs. These frequencies are very close to those from the protocontact sample from Feature 1, which were

12.7 percent and 11.3 percent, respectively, and are higher than those from any precontact sample. These frequencies indicate that acquisition of furbearers was variable during the early contact period, ranging from negligible to quite high levels, although ethnohistoric data are consistent with gradually increasing participation in the fur trade (Bockstoce 2009).

8g. Conflict should be reduced further.

No archaeological data relate directly to this question. The ethnohistoric record is also of limited value, although the fact that there are no recorded instances of large-scale interregional conflict during this period indicates that such conflict is not common and may have ceased altogether.

Internal Differentiation

9. Marginal Periphery Expectations—Internal Differentiation

Herschel Island should become a core region because of the spatially restricted presence of large quantities of bulk goods and preciosities at Pauline Cove.

9a. Qikiqtaryungmiut population density should rise relative to other groups.

The population size of the early contact Qikiqtaryungmiut at Pauline Cove and other sites is difficult to reconstruct. The archaeological record is too fragmentary to attempt an estimate of contemporaneously occupied dwellings, and many of those dwellings would have been tents or snow houses, most of which would leave ephemeral remains that would quickly be dispersed in a heavily used locality such as Pauline Cove (Savelle 1984). On the basis of the meager ethnographic evidence already cited, however, it seems that the resident population may have been around fifty individuals. In addition, it seems reasonable to infer that virtually all other Qikiqtaryungmiut would have visited the site at least once a year, and that during some seasons a larger aggregation would have occurred. The size and duration of this hypothetical aggregation are not alluded to in the ethnohistoric record, and it would have included other Inuvialuit and Iñupiat individuals on the Island in addition to Qikiqtaryungmiut.

During the same period, the population of the former core groups was being reduced through epidemic disease and migration. By this time, a reduction in the population of the Mackenzie River East Channel is indicated by the

fact that Kuukpak was abandoned, leaving only one beluga whaling settlement at Kitigaaryuit, and by the fact that the population of Kitigaaryuit was continuously dropping. The summer population of Kitigaaryuit is reported as 197 in 1893, 175 in 1896, 100 to 120 in 1900 (an estimate based on a report of "30 canoes" at the site), and 103 in 1909 (Stringer 1893, 1896, 1900, 1909).

The population of Point Barrow was also reduced during this period, because of epidemics and emigration with "most of the Point Barrow natives . . . at Herschel" (Bockstoce 1986:274) during some years. The population of the Barrow area is reported to have dropped to about 280 people in two settlements in 1882 (Hall 1990:28). After this date it continued to be reduced by epidemics, until immigration by Iñupiat from other regions began to raise the population of Barrow in the early 1900s (Hall 1990:29). The Gwich'in population remained relatively sparse and mobile during this period, with the village of Old Crow not becoming a significant permanent settlement until the middle of the twentieth century (Acheson 1981). In summary, it is not currently possible to track relative population densities with certainty during this period.

9b. Qikiqtaryungmiut should obtain a higher proportion of preciosities than other groups.

The artifact samples from Features 5 and 8 indicate a wide range of preciosities to which Inuvialuit of Herschel Island had access. (See Tables 12 and 14.) In addition to the glass beads and rifle cartridge cases present in the protocontact period, there were now consumable luxuries such as alcohol and paraphernalia associated with increased tobacco use, entertainment devices such as playing cards and an accordion, ornaments such as bracelets and glass labrets, and a wide range of labor-saving imported technology. However, this assemblage cannot be compared to any other from elsewhere in the region, as no comparable components have been excavated. Also, the ethnohistoric record does not contain information regarding relative frequencies of preciosities in different areas. Therefore, this expectation cannot be evaluated.

9c. Qikiqtaryungmiut should become more sedentary relative to other groups.

The degree of sedentism of the Qikiqtaryungmiut at Pauline Cove cannot be reconstructed solely on the basis of archaeological evidence, because no winter dwellings have been located. However, based on ethnohistoric data, it seems likely that some Qikiqtaryungmiut, perhaps about fifty, were resident at Pauline Cove year-round. The remainder of the group apparently continued

Table 22. Summary of Expectations for the Marginal Periphery

Expectation	Archaeological Data	Ethnohistoric Data
7. Breadth should increase.		
7a. Trade goods from greater number of regions	+/−	+/−
7b. Aggregation sites increase in number or density	N/A	+/−
7c. Boundary maintenance decreases	N/A	+
8. Depth should increase.		
8a. Trade goods more frequent	+	+
8b. Trade goods in more functional classes	+	+
8c. Trade goods replace more local technologies	+	+/−
8d. Proportion of bulk goods increases	+	+
8e. Settlement pattern emphasizes access to trade	+/−	+
8f. Increased acquisition of products for export	+/−	+
8g. Conflict reduced further	N/A	N/A
9. Herschel Island should become a core region.		
9a. Herschel Island has greater population density	+/−	+/−
9b. Herschel Island group has more preciosities	N/A	N/A
9c. Herschel Island group more sedentary	+/−	+/−
9d. Herschel Island group more socially complex	N/A	N/A

Table by author.
Note: N/A = no data; + = supported; − = negated; +/− = equivocal or contradictory data.

to live a semisedentary life in coastal communities, employing logistical mobility strategies for trade or acquisition of specific wild resources.

On the East Channel, the occupants of Kitigaaryuit appear to have maintained a fairly high degree of sedentism, with one to two months of each summer and much of each winter spent at the site of Kitigaaryuit by many members of the regional group. In some cases, mobility may have risen slightly as an increasing number of trips were made to take advantage of trade goods at Herschel or Baillie Island (e.g., Nuligak 1966). The population of the Barrow region also probably remained relatively sedentary during this period (Hall 1990). Gwich'in, on the other hand, remained very mobile (Acheson 1981).

9d. Qikiqtaryungmiut should show indications of a greater degree of social complexity than other groups.

This expectation cannot be addressed. There are no descriptions of Inuit activities on Herschel Island that differentiate Qikiqtaryungmiut from other Inuit groups.

Summary

During the early contact period, a number of issues make many of the expectations difficult to assess. For example, the archaeological data from Herschel Island can no longer be used to indicate interaction between regional groups with certainty, because the Qikiqtaryungmiut now had direct access to Euroamerican goods at Herschel Island. Furthermore, the archaeological contexts from this period are not directly comparable to the semisubterranean houses from earlier periods. Nevertheless, Table 22 indicates that several of the expectations were met, and none were negated. Further discussion of the Qikiqtaryungmiut world-system during this period will be presented in Chapter 10.

10

Summary and Discussion

THIS BOOK HAS BEEN ABOUT RECONSTRUCTING and understanding networks of intersocietal interaction among small-scale human societies, framed in terms of world-systems analysis. It has taken as a starting point Chase-Dunn and Hall's (1991a) approach, which seeks to define structural aspects of world-systems and apply them to societies of diverse scale. A model of hunter-gatherer world-systems was developed, providing a framework for defining appropriate societal units that interact as well as a structure for looking at relationships *between* these units. The model was then applied to the Qikiqtaryungmiut regional group over the past five hundred years. Archaeological remains, as well as the ethnohistoric record, were used to reconstruct indigenous world-systems for three periods, in order to allow interpretation of the changes that occurred between these periods. In this final chapter, I will first summarize the nature of the Inuvialuit world-system in each of these periods and then discuss the contributions, and limitations, of the world-system framework.

The Changing Qiqiktaryungmiut World-System

In the previous three chapters, the expectations for changing Inuvialuit world-systems in the Herschel Island region were evaluated using a variety of data sources. Many of the expectations for which sufficient data exist were supported at least weakly, although a number were not supported at all or remain unresolved. In the following three sections, the assembled data are used to reconstruct the structure of the indigenous world-system during each period. First, though, I will reiterate that the expectations for the three periods are subject to markedly different constraints. Expectations for the first period—the autonomous zone—were based on general expectations for hunter-gatherer world-systems combined with the more particular analogue provided by the Iñupiat ethnographic record. These expectations were evaluated primarily

through the archaeological record, and they establish a baseline for comparison with later periods. Expectations for the second period—the contact periphery—are *relative*; that is, they are intended to be evaluated on the basis of comparison with patterns established for the preceding autonomous zone in order to understand whether change occurred in the direction anticipated by the model. Finally, evaluation of expectations for the third period—the marginal periphery—is made problematic by several factors outlined at the beginning of Chapter 9, primary among which is the near impossibility of being able to reconstruct the indigenous world-system in isolation from the European world-system with which it had become closely articulated. Nevertheless, the evaluation of these expectations can still provide insight into the nature of changing indigenous world-systems during this period.

The Precontact Period/Autonomous Zone

In the late precontact period, the Qikiqtaryungmiut world-system meets the general expectations for world-systems among relatively small-scale hunter-gatherer groups. In terms of breadth, archaeological evidence is consistent with the maintenance of regular interaction primarily with a few neighboring groups. Contemporaneous shifts in artifact types and styles indicate interaction with Inuit groups to both east and west, but not with Gwich'in to the south. Trade also links the Qikiqtaryungmiut to both east and west but not south. There is no direct evidence of aggregation sites associated with large-scale trade, as known from the protocontact period, although their presence cannot be ruled out. In terms of intergroup boundaries, it seems clear that empty territory, well-defined boundaries, or both existed between all Inuvialuit groups and Dene to their south, marked largely by avoidance. No firm evidence of trade exists, although some level of hostile interaction is indicated by the violent deaths of at least thirty-five individuals at the precontact Inuvialuit site of Saunaktuk in the Eskimo Lakes area (Arnold 1990; Melbye and Fairgrieve 1994). Precontact evidence is insufficient to indicate the nature of boundaries between the various Inuvialuit regional groups, although the earliest ethnohistoric accounts indicate both an atmosphere of tension between groups and some differences in visible symbols such as tattoos (Franklin 1828).

The precontact Mackenzie Delta region saw a somewhat greater level of world-system depth than was originally expected. Interaction is clearly seen in the exchange of preciosities and information and the presence of intergroup conflict. Other archaeologically "invisible" forms of interaction, including intermarriage, are assumed to have occurred. Two primary sources of exotic trade goods were identified: Eurasian iron and Alaskan walrus ivory traded through intermediaries to the west, and copper and soapstone traded through intermediaries

to the east. Several categories of trade goods were also circulating among regional groups within the region, as indicated by the presence of baleen and whalebone objects at the site of Saunaktuk, although many potential trade goods are not recognizable without further sourcing studies. Trade goods always form a small proportion of overall artifact inventories, but they are common enough to indicate regular, patterned trade. In this context, it is important to recognize that imported materials do not appear to replace any indigenous technologies; this indicates that although trade goods may have been highly desired, they were not necessary for the successful functioning of Qikiqtaryungmiut technology. In addition, there is no evidence for trade in bulk goods, although low archaeological visibility is a significant issue. Also important is the fact that only a very few imported artifacts from any late precontact context in the Mackenzie Delta region are interpreted to have been used primarily for display of wealth or prestige. Therefore, procurement of prestige goods to reinforce status differences was likely not the primary function of trade, although it may have been one of several factors contributing to its frequency.

In the later precontact period, an incipient form of internal differentiation may have existed, with regional groups that inhabited the East Channel of the Mackenzie River (Kuukpangmiut and Kitigaaryungmiut) being somewhat higher in population density and, perhaps, social complexity than the Qikiqtaryungmiut to their west and the regional groups to their east. The nature of Qikiqtaryungmiut society, and therefore the degree of internal differentiation at the level of the world-system, may have fluctuated during the late precontact period, as indicated by the fact that the two late precontact components on Herschel Island are highly dissimilar in terms of access to trade goods, subsistence patterns, and, perhaps, the degree of sedentism. In addition, it seems likely that the Qikiqtaryungmiut population was relatively sparse when compared against those of the East Channel regional groups and, early in the late precontact period, Barter Island. Intrasite patterning and house architecture are also more complex in the East Channel area than on Herschel Island, potentially—but not conclusively—consistent with a somewhat greater degree of social complexity. However, several classes of data that relate to social complexity, including frequencies of preciosities and ornaments, are less common at Kitigaaryuit than they are at Herschel Island. Late precontact components on Herschel Island yielded higher proportions of ornaments and of preciosities than did those from Kitigaaryuit. However, as discussed earlier, these differences may be due at least in part to differential recovery methods and to the fact that Herschel Island excavations occurred in houses, whereas those at Kitigaaryuit were concentrated in a midden. Further definition of the degree of internal differentiation during the precontact period must await future excavations on the East

Channel, because the two regions have not been subject to similar archaeological methods and thus are not directly comparable.

In summary, the late precontact Qikiqtaryungmiut world-system probably resembled the nineteenth-century Alaskan Iñupiat system in many ways. Each late precontact regional group's annual round was based on locally available subsistence resources, and interaction was probably intended primarily to maintain alliances and partnerships, as well as to gain access to preciosities. Depth may have been somewhat higher than in some precontact hunter-gatherer world-systems for three reasons: (1) highly efficient transportation technology allowed relatively efficient travel and transport of materials; (2) the possibility of resource failures made alliances and partnerships a critical part of long-term societal reproduction; and (3) some of the preciosities available through interregional trade represented significant technological advantages over locally available materials. In particular, metals were very important to precontact Inuit economies, to the point where McCartney (1988) has labeled their technologies "epi-metallurgical" (see also McGhee 1983), although this should not be taken to imply dependence on metal. During the precontact period, some degree of internal differentiation probably existed, with a core region on the East Channel based on the relatively plentiful and predictable beluga whales. East Channel regional groups appear to have had larger and more sedentary populations, and it remains possible that they were also more socially complex than their neighbors; however, the archaeological record is mute in this regard.

Finally, given that the Qikiqtaryungmiut are hypothesized to have been in the autonomous zone during this period, one must ask how important the European world-economy was to the structure of the indigenous world-system. The answer appears to have been that the European world-economy made only a slight impact. The two iron objects from Pauline Cove and Kitigaaryuit indicate distant links to the world-economy, and no doubt greater quantities were in circulation but are not recovered archaeologically because of the great value of iron (leading to its careful curation) and also its tendency to rust into oblivion. However, there is no evidence that iron was a critical or irreplaceable component of Inuvialuit technology during this period. Furthermore, iron was only one category of traded material circulating in a much broader trade network that included a diversity of materials not originating in the European world-economy, including others from Alaska (e.g., ivory). In this connection it is worth emphasizing the fact that precontact Inuvialuit regional groups and world-systems were dynamic entities during this period, as seen in fluctuations in trade good types and numbers and in changing settlement patterns, outlined in Chapter 7. Thus, although the expanding European world-economy did indeed have a slight impact on Inuvialuit world-systems, they were

primarily structured around, and changed as a result of, other factors ranging from internal social structures to external forces such as climate change.

The Protocontact Period/Contact Periphery

During the protocontact period, agents of the European world-economy did not have any form of direct control over the Mackenzie Delta region, but their impact became gradually more pervasive. Direct contact with Europeans was rare, perhaps occurring once per generation. Although the Qikiqtaryungmiut had always been located on a major trade route, a greater frequency and variety of trade goods were now available from North Alaskan Iñupiat, who had access to Russian traders and American whalers, and from Inuvialuit from regional groups in the East Channel area, who had some access to Hudson's Bay Company posts.

The protocontact Qikiqtaryungmiut world-system shows evidence of increased breadth relative to the precontact period. The archaeological evidence for trade with a greater number of regions was equivocal, because many trade goods could not be sourced with accuracy. However, ethnohistoric sources indicate that trade with Gwich'in became relatively frequent and that Qikiqtaryungmiut probably traded directly with several Alaskan regional groups at Barter Island. In fact, intensive use of Barter Island for trade may have begun only during this period. In addition, boundary maintenance appears to decrease over time, as there are indications in the ethnohistoric record that animosities between regional groups were gradually reduced. However, some degree of hostility was probably maintained between regional groups throughout this period (Franklin 1828; Krech 1989; McGhee 1974).

Increased depth is indicated by a number of data categories. Trade goods are present both in greater overall quantities and in a larger number of functional categories. For the first time, the use of local materials in some implements may have been completely replaced by the use of imported materials, particularly in the case of engraving tools. Although much of this trade was for Euroamerican goods, trade in materials such as ivory and soapstone was still important. The ethnohistoric record indicates that some bulk goods were now traded; however, it is not clear whether trade in bulk goods increased because of an absence of relevant archaeological evidence from the preceding precontact period. An increase in acquisition of fur-bearing animals is also evident and can be seen as another indication of the importance of interaction to the Qikiqtaryungmiut world-system. According to the expectations outlined in Chapter 5, increased world-system depth should in this case be associated with increased mobility resulting from more frequent travel for trade. Although this expectation was at least partially met, it is not clear that the

greater mobility was due to increasing efforts to trade rather than to other factors, such as less availability of bowhead whales, possibly brought on by excessive Euroamerican whaling.

During the protocontact period, internal differentiation in the Qikiqtaryungmiut world-system is evident in ethnohistoric and, to a lesser degree, archaeological sources. However, it is not entirely clear that the degree of differentiation has risen over that of the preceding period, because evidence from the two periods is difficult to compare. If the Qikiqtaryungmiut became less sedentary and, possibly, less densely populated during this period because of decreasing access to bowhead whales, and if the East Channel regional groups remained relatively stable in population while gaining better access to Hudson's Bay Company trade goods, then the degree of internal differentiation would have increased. Finally, it was predicted that some form of core-periphery *hierarchy* might occur as a result of the desire of East Channel societies to accumulate newly available trade goods. There is very little evidence for this, aside from the fact that neighboring regional groups were reported to have feared those living on the East Channel.

On the whole, then, the world-system during this period was one that saw relatively intense interaction between regional groups, with the interaction taking on a somewhat greater importance to the Qikiqtaryungmiut than it had during the preceding period. This more intense interaction, between more regional groups, was associated with increasing availability of Euroamerican preciosities and perhaps bulk goods. However, while the primary impetus for change came from outside, the Qikiqtaryungmiut world-system was changing according to local priorities and structures rather than to any dictated by external agents. The mechanisms for transmitting information, transferring material objects, adapting to demographic or ideological changes, and accelerating the introduction of some new phenomena while delaying others were determined by the Qikiqtaryungmiut. The resulting world-system was merely an intensification of precontact patterns of interaction. Qikiqtaryungmiut continued to live broadly similar lives (as indicated by data classes such as faunal remains, artifact types, and house architecture), while placing more emphasis on interaction, and probably reducing levels of conflict in order to enable that interaction.

The Early Contact Period/Marginal Periphery

In the early contact period, Herschel Island became the site of direct and sustained contact between overwintering Euroamerican whalers and Inuvialuit (Bockstoce 1986). This intense contact resulted in the direct availability of many new resources for Inuvialuit, including implements, prestige goods, and food. Many of these goods could be purchased through wage labor. At the

same time, the social and demographic profile of the region changed rapidly because of epidemic disease and the immigration of North Alaskan Iñupiat. In addition, regional systems of interaction were breaking down as a result of this multitude of new sources of trade goods. During this period, exchanged Euroamerican goods can no longer be assumed to indicate interaction between indigenous groups, since the Qikiqtaryungmiut now had direct access to Euroamerican goods at Herschel Island.

During the early contact period, increased world-system breadth is indicated by the fact that previously existing regional group boundaries had broken down, with Inuvialuit now moving freely around the entire Mackenzie Delta region (Nuligak 1966). New aggregation sites, notably Pauline Cove and Baillie Island, were densely populated with indigenous traders, although the extent of the interaction among different regional groups, as opposed to between Inuvialuit and Euroamericans, is not clear. World-system depth was also predicted to increase during this period. A significant increase in trade is evident in the early contact components at Pauline Cove. Again, however, it is unclear whether this increased access to trade goods represents interindigenous trade, as opposed to direct acquisition from Euroamericans.

Evidence for changes in the pattern of internal differentiation is also equivocal. The appearance of large quantities of bulk subsistence goods at Pauline Cove effectively boosted the carrying capacity of this region, and the number of Qikiqtaryungmiut who lived at the site, as well as the duration of their occupation, probably increased. However, it is also evident that, for a decade at least, the East Channel of the Mackenzie River continued to be the site of annual aggregations at Kitigaaryuit. The degree of social complexity of Qikiqtaryungmiut at Herschel Island during this period cannot be assessed. In sum, at a minimum, the degree of internal differentiation between Herschel Island and the Mackenzie River East Channel decreased during this period.

In the early contact period, the indigenous world-system became closely articulated with the European world-economy. Ample ethnohistoric data indicate that local Inuvialuit changed their settlement patterns and subsistence system to better articulate with the Euroamerican whalers' settlement. Sources are relatively silent on the degree to which local networks of trade, intermarriage, and information exchange continued, although they must have remained active to a significant degree. On reviewing the evidence, however, it seems likely that the collapse of local world-systems may have been even more rapid in this region than in many others, and that this fact contributes to the difficulties encountered in reconstructing the Qikiqtaryungmiut world-system. Three reasons can be offered for a rapid collapse in this region. First, contact was extremely sudden and widespread, with many hundreds of whalers entering the region immedi-

ately after 1889. Second, as a coastal people, Inuvialuit systems of interaction could have been largely circumvented by whalers' ships. The whalers could contact each regional group separately, as opposed to exerting their influence at only a few points. Third, epidemic disease decimated populations to a greater extent in the Mackenzie Delta region than in almost any other area in the western Arctic, making people vulnerable to external influences.

Summary

To sum up, this analysis within a world-system perspective has contributed to an understanding of the culture history of the Qikitaryungmiut and their neighbors in two primary ways. First, the world-system perspective allows local culture history to be seen as an evolution of intersocietal networks rather than only of individual societies. This approach shares with most studies of hunter-gatherers the view that individual regional groups' lifeways are based to a significant extent on local environmental conditions. However, in the world-systems approach they are also seen as responding to the nature of the intersocietal networks of which they are a part. Thus, variable intensities of exchange (the most visible type of interaction) are seen in relation to other phenomena such as mobility, changing subsistence patterns, and the changing breadth of world-systems, to put patterns of regional interaction in a broader context. Change at the level of the world-system accounts for such phenomena as increased interaction of Inuvialuit with Gwich'in, decreased interregional animosity, and, possibly, greater mobility in the protocontact period. In addition, the characterization of internal differentiation allows variability between regional groups to be interpreted with more clarity. In the present case, regional groups occupying the East Channel of the Mackenzie River are seen as potential cores or centers of their respective world-systems during the late precontact and protocontact periods. The degree of internal differentiation varied over time, depending on the ability of other regional groups to successfully pursue important resources, such as bowhead whales. Finally, this pattern began to shift rapidly with the appearance of new bulk resources at Herschel Island in the form of Euroamerican trade goods, although this potential change was soon overshadowed by the effects of epidemic disease. In sum, the process of culture change happened not only at the level of the regional group but also at the level of the world-system, which varied significantly over time. It was this intensified world-system that, in turn, affected each regional group by supplying new materials and information.

The second way in which the world-system approach adds to our understanding of regional culture history is that it allows us to perceive the Inuvialuit as constituting a complex interacting system that reacted to and affected

interaction with Euroamericans in a dynamic way. This book indicates that Inuvialuit regional groups reacted to increasing availability of Euroamerican preciosities, bulk goods, and information not only by incorporating these objects or ideas into their activities at a local level but also by changing the nature and scale of their interaction with other regional groups. More groups interacted more frequently in more ways, expanding the system in breadth and depth. The rapid culture change that occurred between the precontact and contact periods can therefore be seen as one that was accomplished largely through internal reorganization of Inuvialuit society.

Hunter-Gatherer World-Systems

The model developed in this study cannot be considered definitive or comprehensive, because it has been evaluated on the basis of only one instance of hunter-gatherer world-system change. Furthermore, during the period under study, not all the factors hypothesized to affect world-systems were active. Therefore, it should be considered an initial and somewhat experimental effort to provide additional structure for the study of small-scale interaction networks, particularly in archaeological contexts. This leads to a consideration of the potential contributions, and limitations, of the framework as developed and applied in this book.

Contributions

The theoretical perspective developed in this book has the potential to contribute to world-system theory, and to studies of hunter-gatherers and other small-scale societies, in four main ways. First, the perspective outlined here attempts to make the concept of world-systems more broadly applicable so that it can encompass all types and levels of intersocietal systems, from the modern global world-economy to interaction among mobile hunter-gatherers. This expands the current direction of world-system theory, which has its origins in Wallerstein's (1974) study of the European world-economy, and has since been made applicable to earlier and smaller-scale societies (e.g., Chase-Dunn and Hall 1991b). This contribution to world-system theory was possible in the present study because it was designed and implemented from a largely anthropological perspective. Most other authors of world-system studies write from a point of view heavily influenced by other disciplines, reflecting the fact that the goal of many world-systems analysts is to create a holistic discipline that draws on sociology, history, economics, political science, and anthropology (Ragin and Chirot 1984:307). Previous authors have contributed immeasurably to an un-

derstanding of world-system processes but have left some issues, such as their application to small-scale societies, for others to refine.

Second, this book contributes to the understanding of small-scale intersocietal interaction by defining an explicit terminology and structure for its analysis. Although the model developed here was designed specifically for the study of hunter-gatherers, many aspects should be applicable to other small-scale societies as well. Building on Chase-Dunn and Hall's (1991a) call for an eclectic approach to the study of world-systems, this study defined three major dimensions along which world-systems vary: depth, breadth, and internal differentiation. Internal differentiation was originally defined by Chase-Dunn and Hall (1991a) but has been expanded here. The other two dimensions, breadth and depth, were suggested by Hopkins and Wallerstein's (1982:123) terms "broadening" and "deepening" (see also Carlson 2001; Shannon 1996:128–131), but they have been completely reformulated and expanded here to allow for the characterization of small-scale world-systems and to provide a language for the discussion of world-system change, particularly in archaeological contexts.

Third, the case study provides an example of how the model can be applied to the understanding of a real-world instance of small-scale world-system change, drawing on many categories of archaeological and ethnographic data. More specifically, this case defined the regional group as the appropriate societal scale on which to build understanding of past world-systems, and it illustrated the "group-centric" approach, which models overlapping, rather than discrete and bounded, world-systems. (See Figure 3.) According to this approach, world-systems centered on neighboring regional groups will vary; however, it is reasonable to assume that neighboring world-systems will "normally" be similar and will change in similar ways at similar times, largely because the regional groups, and therefore world-systems, are closely connected through interaction. Thus, for example, in the present case the Qikiqtaryungmiut world-system will be similar, but not identical, to the adjacent Kuukpangmiut world-system. At the same time, the case study provides an example of how site-specific information can be used to examine world-system-level change, albeit in connection with archaeological and ethnographic data drawn from a broader region. In essence, because world-systems are overlapping, it makes sense to start with a single place that serves as the focal point (although not necessarily the core) of its world-system and then examine how it changes as well as how the other regional groups in the world-system change.

Fourth, this book provides a bridge between two major aspects of world-system theory. On the one hand, the overall chronological structure of the

study was framed in terms of the incorporation of the Mackenzie Delta region into the European world-economy. In the process, by refining the definition of the external arena involving its division into the external zone and the autonomous zone, this study expanded Hall's (1986, 1989) scheme for delineating stages of incorporation. On the other hand, the unit of interaction that was placed at the center of the study was the small-scale indigenous world-system.

Limitations

The major methodological limitation of this model is common to many categories of archaeological research. Namely, to apply the model successfully, a high-resolution archaeological or ethnohistoric database is required, and it must be both spatially and chronologically extensive. To look at aspects of world-systems such as internal differentiation, a broad area must be represented to allow observation of similarities and differences between multiple regional groups and to establish sources and directions of trade patterns and other forms of interaction. In addition, if world-system *change* is the subject of study, many of the participating regional groups must be represented by a number of discrete archaeological components or detailed ethnohistoric observations representing different periods. Thus, in the current case study many of the expectations could not be evaluated because of a lack of appropriate data—for example, concerning the degree of social complexity within regional groups centered on the Mackenzie River East Channel.

Furthermore, many factors that are considered indicative of aspects of world-systems, such as intermarriage or maintenance of boundaries, are difficult to establish on the basis of archaeological data. In fact, even the three defined dimensions of world-system variability are not equally visible, with breadth generally harder to define than depth or internal differentiation, although normally there will probably be a close relationship between depth and breadth (i.e., as one increases, so will the other). Therefore, patterns of exchange may remain the most important data set for inference of world-systems, even in cases where material exchanges were not the most important category of interaction within the world-system. Given this fact, it is critically important that similar and high-resolution recovery methods are employed at sites throughout a region in question, because trade goods are frequently small and easily overlooked and therefore could be underrepresented in collections from sites excavated without fine-grained recovery techniques.

The importance of the extent and quality of the database to world-systems analysis is well illustrated by the present case study. For each period, very few high-resolution archaeological components have been excavated

throughout the greater Mackenzie Delta region, making regional comparisons difficult. In addition, although the ethnohistoric record contains a few very clear glimpses of the Qikiqtaryungmiut or neighboring groups, it is for the most part sketchy and incomplete. These problems are most acute when attempting to reconstruct the degree of internal differentiation. In most cases, the differences between Qikiqtaryungmiut and neighboring groups could not be reconstructed accurately. This limitation is partly reduced in the present study through the use of relatively long chronological periods. For example, the protocontact period lasts approximately one hundred years. A disadvantage of using long periods is that major changes happen within them, making it difficult to characterize them in a synchronic fashion. Shorter periods would allow a finer-grained look at world-system change but would require an even higher-resolution database, which often is not available.

The greatest potential theoretical weakness of the study is the fact that it is based on an intentionally reductionist model, with most aspects of hunter-gatherer world-systems linked to subsistence resources and preciosities. As outlined in Chapter 3, these two sets of factors are emphasized because they are consistent with other aspects of world-system theory, generally are accessible and measurable in the archaeological record, and are demonstrably important to all societies. However, of course many other factors will influence interaction networks, ranging from political histories and deep social structures within each region to issues such as the demographic impacts of introduced epidemic diseases. The effective incorporation of these additional factors to supplement the model developed here remains an important area for future research. Linked to this is the fact that world-systems analysis focuses research at the broadest level of social formation, but analysis of social change must not lose sight of linkages to smaller-scale processes involving the regional group, local group, household, or individual.

Conclusion

This study began with the premise that social structures, and social change, can be understood fully only at the highest spatial level within which individual societies function. This highest level is represented by the world-system. This premise was then applied to hunter-gatherers, who have tended to be neglected by world-system theorists (with some exceptions—e.g., Chase-Dunn and Mann 1998). Most existing studies of hunter-gatherers have emphasized local or intraregional phenomena, often at the expense of large-scale

interregional patterns of interaction. Several key factors were identified as playing a major role in constraining the nature of, and patterns of change in, hunter-gatherer world-systems, and the distribution of exploited subsistence resources (including traded bulk goods) and preciosities was emphasized.

Of course, each instance of indigenous or smaller-scale world-systems must be analyzed and understood on its own merits and in its own historical context. World-systems should conform to some overall logic, as emphasized in generalizing theory, but they should also respond to local and particular histories and conditions. Thus, for the present case study, expectations were based on both the general model of world-system change and on particulars of regional culture history—for example, as represented by ethnographically reconstructed Alaskan Iñupiat interaction networks. As with any model, this one is subject to revision and should be augmented or changed through future analyses. In particular, the model should be refined further on the basis of cases where additional factors are at play. The present study concentrated on factors active during the colonial period, such as increased access to preciosities, greater access to bulk goods, and Euroamerican-caused reductions in bowhead whale populations. A next logical step would be to evaluate the model on the basis of a fully precontact test case in which other factors—such as climate change, population movements, or the development of new subsistence technologies—affect the world-system.

Understanding past human societies is challenging, with these challenges often amplified in the case of small-scale societies known exclusively or primarily through archaeology. This is particularly true for patterns of interaction, which can often leave few observable residues. However, past societies cannot be understood in a vacuum. They do not adapt only to local conditions, schedule their annual cycles of activities exclusively according to environmental and ecological factors, or build their understanding of the world solely on the basis of local factors. Rather, they interact with other societies for reasons ranging from economic security to the reproduction of internal social structures. Interaction can take many forms, from visiting, ceremony, and trade to conflict and avoidance. These interactions always occur in patterns that develop over time and that form the framework within which culture change happens, ideas spread across continents, and people create their social and ideological worldviews. Thus, these frameworks form a critical part of archaeological interpretation if a holistic understanding of past societies is to be achieved. A good first step is to see each individual, family, settlement, or regional group not as a disconnected entity but rather as part of a world-system.

Notes

Chapter 1. Introduction

1. The term "Inuit" is used in this book to designate all speakers of Inuit-Inupiaq languages from Alaska to Greenland, sometimes referred to as "Eskimo" or, in archaeological contexts, "Neo-Eskimo." "Inuvialuit" will be used to denote the Inuit population of the Mackenzie Delta region from around 1400 AD to the present; this group is often referred to as "Mackenzie Inuit" or "Mackenzie Eskimo" in the published record. The earliest Inuvialuit ancestors in the region, from about 1200 to 1400 AD, are referred to as "Thule Inuit," because they are part of this much broader cultural entity. Some early sources record a variant of "Siglit" or Tchiglit" for "Inuvialuit," and Alaskan Iñupiat referred to them as "Kogmollik." However, it is unlikely that these terms were in general use among Inuvialuit to refer to themselves. "Inuvialuit" is in fact a term that originated in the twentieth century, signifying the modern population that has been composed of a dynamic mix of earlier regional Inuit populations and Alaskan Iñupiat cultures since about 1900. Although I have previously used the standard term "Mackenzie Inuit" to refer to pre-twentieth-century populations of the region, I now prefer the term "Inuvialuit" because it makes clear the historical and cultural continuity in the region.
2. The terms "precontact," "protocontact," and "contact" follow common usage and point to the degree of interaction between indigenous peoples and Europeans. "Precontact" refers to the period before any significant interaction, "protocontact" to a period of sporadic or low-level interaction, and "contact" to situations in which direct, sustained interaction occurred between the two groups. In this book, these terms correspond roughly to the autonomous zone, contact periphery, and marginal periphery of the European world-system, respectively.

Chapter 3. Hunter-Gatherer World-Systems

1. The terms "core" and "periphery" have been retained in the present context to reflect their relationship to world-system theory. However, due to significant differences in scale and structure, the use of these terms in hunter-gatherer contexts should not be taken to indicate precise parallels to core-periphery relations in larger-scale world-systems.

Chapter 4. Background to the Case Study

1. Several overlapping geographic zones must be defined as they relate to this study. The Mackenzie Delta refers to the vast and biologically productive delta of the Mackenzie River. The Mackenzie Delta region refers to a broader area, including the Delta itself and coastal areas to its west and east. The Mackenzie Delta region is synonymous with the entire region inhabited by the Inuvialuit. (See Figure 7.) The East Channel refers to the lower East Channel of the Mackenzie River, including Kittigazuit Bay and the adjacent coasts of Richards Island and the Tuktoyaktuk Peninsula. The East Channel is critically important to Inuvialuit cultural development, because it was home to the two most populous regional groups, the Kuukpangmiut and Kitigaaryungmiut.
2. "Dene" is a general term referring to First Nations peoples who speak Athapaskan languages and who live in much of the interior Subarctic of western North America. "Gwich'in" refers to the more specific set of Dene regional groups who lived directly south of the Inuvialuit in the study area. (See Figure 7.)
3. "Qikiqtaryungmiut" is the name used by the regional group inhabiting the Yukon North Slope and Herschel Island. However, some other Inuit groups referred to them as "Tuyurmiat" (cf. Nagy 1994b, 2012; Stefansson 1919:23).
4. The remainder of this section was previously published, in slightly altered form, in Friesen 2009b.

Chapter 6. The Qikiqtaruk Archaeology Project

1. A preliminary version of this description of Washout Feature 3 and its contents was presented in Friesen and Hunston (1994).
2. A preliminary version of this description of Pauline Cove Feature 7 and its contents was presented in Friesen (1994).
3. A preliminary version of this description of Pauline Cove Feature 1 and its contents was presented in Friesen (1994).
4. The descriptions of Pauline Cove Features 5 and 8 were originally presented in Friesen 2009; a preliminary version of the description of Feature 8 and its contents was originally presented in Friesen (1994).

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Index

Italicized page numbers refer to illustrations, figures, and tables.

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